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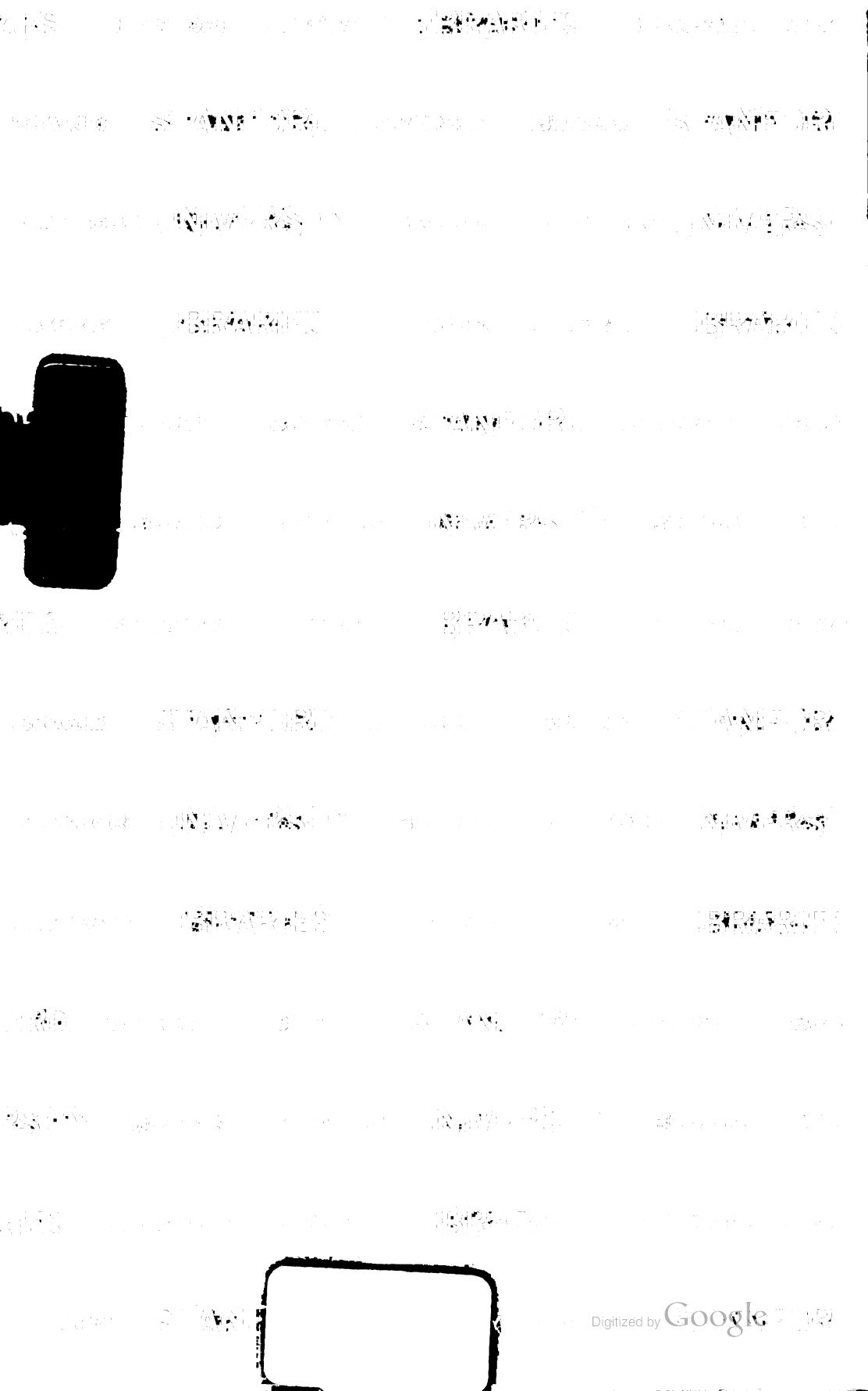
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THE INTERNATIONAL YEAR BOOK

A COMPENDIUM OF THE WORLD'S PROGRESS
DURING THE YEAR

1900

EDITOR

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CONSULTING EDITOR

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PREFACE.

OWING to the unusual importance of the year's political record, the YEAR BOOK for 1900 has been extended somewhat beyond the limits of preceding volumes. While international matters required fully as much space as before, the discussion of American politics was greatly widened by the occurrence in this year of the PRESIDENTIAL CAMPAIGN. In international politics the interest of the year was mainly centred in the events in China and South Africa. In treating these and other subjects, the aim has been, as hitherto, not only to record events, but to outline the course of current discussion upon them with a view to presenting fairly the opposing views on debated questions. This method has been applied with especial care to the treatment of the PRESIDENTIAL CAMPAIGN in the United States, under which head will be found in parallel columns a summarized statement of the principal arguments on each side, presented, so far as possible, in the words of the controversialists themselves. The number of new biographies required was very large, and the death list includes such famous names as RUSKIN, NIETZSCHE, MARTINEAU, and ARGYLL. The book comprises a fuller treatment of the history of the several States than was given in previous records, and especial attention has been paid to the subjects of State legislation and MUNICIPAL GOVERNMENT. A number of special articles have been contributed to the departments of Sociology and Economics, including such topics as CENSUS, SOCIOLOGY, POLITICAL ECONOMY, SOCIAL SETTLEMENTS, WAGES, STRIKES AND LOCKOUTS, TRADE-UNIONS, CRIME, PAUPERISM, and LABOR LEGISLATION. In the treatment of MUSIC and LITERATURE, ENGLISH AND AMERICAN, the aim has been made to sketch the tendencies of the year and describe the principal works rather than to include full lists of names and titles. In like manner a record of educational tendencies and discussion has been substituted for the long statistical table on UNIVERSITIES AND COLLEGES, which has appeared in the two previous volumes. The subject of religious denominations has also been treated somewhat more fully than in previous years.

In science, both pure and applied, the usual record of the year involves the discussion of a number of events of considerable importance. To mention a few instances: In ASTRONOMICAL PROGRESS there were the observation and study of the eclipse of May 28, an account of which is written by one of the observers. In BIOLOGY there were the latest experiments in artificial parthenogenesis as carried on by Loeb, and an increasing activity in the department of ORNITHOLOGY. In FORESTRY and HORTICULTURE there was especial interest, owing to the foundation of new schools for their study and the development of a national forestry policy by the government. Other matters requiring more or less extended notice were: In ENTOMOLOGY the study of insects as a cause of disease; in preventive MEDICINE the recent advances in SERUM THERAPY; in industrial development the subjects of COAL,

IRON, and other mineral products; in PHYSICS, Pupin's new system of long-distance and submarine telephony; in CHEMISTRY the many minor discoveries of the year; in ARCTIC EXPLORATION the Duke of the Abruzzi's expedition, which reached the "Farthest North;" in ARCHÆOLOGY the results of recent field work, both abroad and in America, and in ENGINEERING the construction of the TRANS-SIBERIAN RAILWAY and various important improvements in municipal public works.

It has seemed appropriate to include in a record for the closing year of the century a series of articles sketching briefly the PROGRESS OF THE CENTURY in various departments of art, science, and literature. Special articles on these subjects will be found in the latter part of this volume, which also includes tables, based on the returns of the United States census of 1900, giving the population of all the towns above 1000 and a review of the population by States during the century. Finally, to facilitate reference to this and preceding YEAR BOOKS, an index of the separate titles in all three volumes is appended to the present volume.

FRANK MOORE COLBY.

May 10, 1901.

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THE INTERNATIONAL YEAR BOOK 1900

ABRASIVES, materials used for grinding or polishing, either in the form of powders or stone. The former includes quartz, diamond, corundum, emery, infusorial earth, tripoli, garnet, and pumice. The latter class embraces millstones, whetstones and grindstones, and carborundum. All of these except the last are natural products. The production and imports in the United States for 1899 were as follows:

Article.	Production. Quantity : Short Tons.	Value.	Imports. Value.
Buhrstones	_____	\$ 28,115	\$18,881
Corundum and emery.....	4,900	150,600	157,131
Garnet	2,765	98,325	_____
Grindstones	_____	675,586	63,852
Infusorial earth.....	3,302	25,302	_____
Tripoli	_____	11,730	_____
Oilstones and whetstones.....	_____	208,283	34,510
Quartz	_____	39,000	_____
		<u>\$1,236,941</u>	

ABRUZZI, Duke of the, Prince LUIGI AMADEO, of Savoy-Aosta, son of the late King Amadeo of Spain, who abdicated the throne in 1873, and nephew of the late King Humbert of Italy, became prominent in 1900 through his Arctic expedition, which attained the most northerly latitude hitherto reached—86° 33', or 239.15 statute miles from the Pole. (See ARCTIC EXPLORATION.) The duke was born in Madrid in 1873. Before his voyage to the far north he was famous as a traveller, having made in 1897 the first ascent of Mount St. Elias. He and his party, in which was Captain Umberto Cagni, who accompanied him in the Arctic expedition, accomplished the unprecedented feat of reaching the summit of the mountain. The difficulty of this venture lay not so much in the height of the mountain—18,000 feet—as in its high latitude; for as the snow line reaches nearly to the sea level, retreating very little in summer, the ascent is attended with all the dangers of continuous masses of snow and ice, while the problem of fuel and food is greatly increased. Toward the close of 1900 the duke undertook the organization of an expedition to search for the three members of his party who were lost in Franz Josef Land early in the year. It was expected that this expedition would sail from Gothenburg and would reach Franz Josef Land in the middle of July, 1901.

ABYSSINIA, an independent country in eastern Africa, separated from the Red Sea by Italian Eritrea and from the Gulf of Aden by the British Somali coast. The capital, or residence of the emperor, is Adis Ababa.

Area and Population.—Abyssinia proper comprises four provinces, Tigré, Shoa, Amhara, and Godjam, the combined area of which is estimated at 100,000 square miles; additional territories, regarded as dependencies, aggregate some 50,000 square miles, but the frontiers, except on the east touching Eritrea, French Obok, and the British Somali protectorate, are not well defined. A boundary dispute between Abyssinia and Italy was settled in 1900, when the latter country accepted the Mareb-Belesa-Muna line as marking the Eritrean frontier. Pursuant to a treaty with

Great Britain in 1898 Abyssinia acquired some 7000 or 8000 square miles of the Somali protectorate. There are numerous towns, but very few have over 5000 inhabitants. Among those of the greatest political and commercial importance are: Adis Ababa, capital of Shoa; Ankober, former capital of Shoa; Adua, capital of Tigré; Antalo, former capital of Tigré; Gondar, capital of Amhara; Barro, Aksum, Harar, Mahdera-Mariam, and Amba-Mariam.

The inhabitants are a mixed race of Semitic and Arabic types. Two different languages are spoken by the upper classes—one in Tigré and the other, the Amharic, in the rest of Abyssinia; a third language is spoken by the lower classes of the people. The state religion is Christianity, the Abyssinians having been members of the Alexandrian Church since the fourth century. The Abuna, or head of the church, is a Copt, who is consecrated by the Patriarch of Alexandria; he is under the supremacy, however, of the *echegheh*, a native prelate,* who nominally presides over some 12,000 monks belonging to the religious orders. There are also a number of Mohammedans and Jewish Falashas in the country. Education, which is in the hands of the clergy, is not very advanced; only a comparatively small number of children are taught, and it appears that these receive instruction principally in grammar, poetry, singing, and Scripture texts.

Government.—In 1889 the King of Shoa became the supreme ruler of Abyssinia under the title of Emperor Menelek II. He is practically an absolute monarch, but maintains a sort of feudal political system with the *rases*, or princes, of the country, under whom are governors of districts and chiefs of villages. There is a state council consisting of the most important *rases*. The army is said to number about 150,000 men.

Industries, Commerce, etc.—Cattle and sheep grazing is the principal occupation of the people. A comparatively small part of the land is under cultivation, but the country is well adapted for the production of cotton, sugar, dates, wine, barley, millet, wheat, maize, and coffee. All of these commodities are produced, but none exported except coffee. Other products and exports are wax, civet, gold, and ivory. The imports consist chiefly of cotton and woollen goods, cutlery, glassware, arms and munitions, and provisions. Statistics of commerce are not available; but figures for the trade of the city of Harar, the commercial centre of the country, place the imports in the year 1897-98 at \$2,427,265, of which \$1,133,296 represent the value of cotton cloths, and the exports at \$1,126,155, of which amount coffee stood for \$463,200. Customs duties are imposed on both imports and exports. A railway has been projected from Jibouti in French Somaliland to Harar, about 186 miles distant, and some 50 miles of the line have been constructed.

Religious differences in Abyssinia resulted in a battle on March 19, 1900, at Jigjiga in the Ogadyn district, in which the Christian governor of Harar was victorious over the Mohammedans, of whom it was said some 2000 were killed. This number of fatalities, however, seems unreasonably large. It was also reported that King Menelek sent 8000 horsemen as reinforcements to the Christians.

It was feared in some quarters in 1899 that King Menelek was about to assume an attitude hostile to Great Britain, but this was dispelled about February 1, 1900, when it was announced that a British mission arriving at Adis Abeba some three months previously had been cordially welcomed by the king. Nevertheless, Russian influence in Abyssinia appears to be increasing. Recently a party of Russian priests joined the Russian colony at Adis Abeba with the purpose, it was said, of proving to the Abyssinians the essential unity of the Greek Church and the Coptic, or Abyssinian, Church. Their success would mean a considerable strengthening of Russian power in the country. Several years ago King Menelek appointed the Russian adventurer, Count Leontieff, and a French prince, of the House of Orleans, governors of his "equatorial province." These positions have seemed to be merely nominal, but the count has become desirous of assuming actual gubernatorial authority. Should Menelek acquiesce it is not improbable that difficulties with Great Britain would ensue, since that power claims a large part of Menelek's so-called equatorial province, and is not likely to yield in the dispute; for the country in question provides the best course for the Cape-to-Cairo Railway.

ACADÉMIE DE MÉDECINE, Paris, France, founded 1820, has 100 members, grouped in ten sections: Anatomy and physiology, medical pathology, surgical pathology, pharmacy, etc. In 1900 the grant received from the French Department of Public Instruction was 75,500 francs. The Academy publishes a *Bulletin* and *Memoires*.

ACADÉMIE DES BEAUX ARTS. See INSTITUTE OF FRANCE.

ACADÉMIE DES INSCRIPTIONS ET BELLES-LETTRES. See INSTITUTE OF FRANCE.

ACADÉMIE DES SCIENCES. See INSTITUTE OF FRANCE.

ACADÉMIE DES SCIENCES MORALES ET POLITIQUES. See INSTITUTE OF FRANCE.

ACADÉMIE FRANÇAISE, founded in 1635 by Cardinal Richelieu is the highest of the five academies constituting the Institute of France (*q.v.*). Its members, elected for life, are 40 in number (the "forty immortals"), each of whom receive 1500 francs a year. In addition the secretary receives 6000 francs, and 6 members on the dictionary committee receive 1000 francs each for their work. The Academy has the disposal of a prize of 12,000 francs yearly for eloquence and poetry alternately, and two funds, from which are awarded annually 21 *prix littéraires* and 40 *prix de vertu*. The present members, with the dates of their election, are: Legouvé, 1855; Duc de Broglie, 1862; Emilie Ollivier, 1870; V. Sardou, 1877; Duc d'Audiffret-Pasquier, 1878; Aimé Rousse, 1880; René Sully-Prudhomme, 1881; Adolphe Perraud, 1882; François Coppée, 1884; Ludovic Halévy, 1884; Valléry Gréard, 1886; Comte d'Haussonville, 1886; Jules Clarétie, 1888; Vicomte de Vogüé, 1888; Charles de Freycinet, 1890; Louis Viaud (Pierre Loti), 1891; Ernest Lavisse, 1892; Vicomte de Bornier, 1893; Paul Thureau-Dangin, 1893; Marie Brunetière, 1893; Albert Sorel, 1894; José de Hérédia, 1894; Paul Bourget, 1894; Henri Hous-saye, 1894; Jules Lemaitre, 1895; Jacques Thibault (Anatole France), 1896; Marquis de Beauregard, 1896; Gaston Paris, 1896; Claude-Adhémar (André Theuriet), 1896; Comte Vandal, 1896; Comte de Mun, 1897; Gabriel Hanotaux, 1897; Claude Guillaume, 1898; Henri Lavedan, 1899; Paul Deschanel, 1899; Paul Hervieu, 1900; Emile Faguet, 1900; Eugene Berthelot, 1900.

ACADEMY OF MEDICINE, AMERICAN, is a society formed for the purpose of investigating the sociological problems of the medical profession and for putting in practice the results of its investigations. Its researches are strictly scientific. It has 790 members and 20 honorary members. President, S. D. Risley, M.D., Philadelphia, Penn., secretary, Charles McIntire, M.D., Easton, Penn.

ACADEMY OF POLITICAL AND SOCIAL SCIENCE, AMERICAN. See POLITICAL AND SOCIAL SCIENCE, AMERICAN ACADEMY OF.

ACADEMY OF SCIENCES (LISBON), founded 1779, carries on its work under two main branches: Mathematics and natural sciences, and philosophical studies. Under the first head are maintained separate sections in mathematics, physics, natural history, and medicine; under the second, literature, moral philosophy, political science, and history and archæology. Each section has five active besides corresponding members. The Academy has an important library, and publishes *Jornal de Sciencias Mathematicas, Physicas, e Naturaes* (since 1866), *Memorias* (since 1797), and various single works.

ACADEMY OF SCIENCES (MUNICH), (KÖNIGLICHE BAYRISCHE AKADEMIE DER WISSENSCHAFTEN UND GENERALKONSERVATORIUM), founded 1759, has three sections, devoted respectively to philosophy and philology, mathematics and physics, and history; publishes *Denkschriften* and *Abhandlungen*.

ACETOPYRIN, a most recent antipyretic is acetopyrin, a compound of antipyrin and acetylsalicylic acid. It is said to produce no noxious or unpleasant effects upon the stomach or intestine, even in large doses, and to cause no ringing in the ears. Winter and Braun, of Vienna, claim good results from its use in migraine, neuralgia, and acute articular rheumatism.

ACETYLENE GAS. See GAS, ILLUMINATING.

ACTINIUM. See CHEMISTRY (paragraph New Elements), and PHYSICS (paragraph Becquerel Rays.)

ACTORS' FUND OF AMERICA, a charitable institution formed in 1882. Disbursements last fiscal year, \$31,200.41; since organization, \$642,186. In 1900 there were 976 members. President, Louis Aldrich; secretary, Edwin Knowles; assistant secretary, Theodore Bromley, 12 West Twenty-eighth Street, New York City.

ACTUARIAL SOCIETY OF AMERICA was organized in 1889 for the promotion of actuarial science. The membership is composed of most of the actuaries of the United States and Canada, with members also in Great Britain, France, Belgium, and Australia. The society has published twenty-four numbers of *Papers and Transactions*. Admission in general is by examination, through a preliminary enrolment as associate. Present number of members is 103, of associates, 23. The annual meeting is held in New York on the first Thursday after May 14. President, Thomas B. Macaulay, Montreal, Canada; secretary, John Tatlock, Jr., 32 Nassau Street, New York.

ADDICKS, JOHN EDWARD. See DELAWARE (paragraph Politics).

ADEN, a territory in southwestern Arabia, comprising the peninsula of Aden proper, the adjacent small peninsula known as Little Aden, the settlement and town

of Shaikh Othman on the mainland, and the island Perim. The total area of the territory is 80 square miles, and its population in 1891 was 44,079. The soil is unproductive and the trade of the territory is exclusively transshipment. The imports during 1898-99 amounted to 41,694,011 rupees, and the exports to 33,289,895 rupees. During the same year 1395 merchant vessels of 2,636,294 tons entered the port of Aden, and 648 vessels entered at Perim. The territory is a dependency of the Bombay Presidency, and is administered by a political resident, who is also military commander. The revenue is derived chiefly from duty on liquor, opium, and salt.

ADLER, DANKMAR, an architect of wide reputation, died in Chicago, Ill., April 16, 1900. Born at Langsfeld, Saxe Weimar, in 1844, he was educated in the public schools, came to the United States, studied architecture in Detroit and Chicago, and in 1862-65 served in the Civil War with the First Illinois Artillery. From 1869 to the time of his death he practised his profession in Chicago. Among the important buildings designed by him are: Unity, Grace Methodist Episcopal, and First Methodist Episcopal churches, Zion, Anshe Maariv, Sinai, and Isaiah synagogues, the Stock Exchange building, McVicker's Theatre, and The Auditorium, all in Chicago; the opera house, Pueblo, Col.; St. Nicholas and Wainwright Hotel and Union Trust buildings, St. Louis; the passenger station of the Illinois Central Railroad at New Orleans. Adler also designed several large convention halls, and was the associate architect of the Carnegie Music Hall in New York.

ADONIDIN. From a study of this drug made in 1900 by Stern, we learn that its physiological action is similar to that of digitalis. He claims that in rapidity, certainty, and permanency of action it surpasses digitalis, caffeine, spartein, strophanthus, and convallaria. It is useful as a diuretic as well as a heart stimulant; and while thus far its use has not caused death, it should be taken only under a physician's direction. Adonidin is obtained from the leaves and tops of *Adonis vernalis*, a perennial herb, native in Europe and cultivated for its lemon-yellow flowers in America. It grows about a foot high and blooms in the spring.

ADULTERATION. See **FOOD**.

ADVANCEMENT OF SCIENCE, AMERICAN ASSOCIATION FOR THE, organized in 1848, had in 1900 a membership of 1950. The spring meeting of the council was held in Washington, April 17, 1900, the general meeting at Columbia University, New York, June 23-30, 1900. Fifteen affiliated societies of national scope were in attendance, the total attendance being about 1000. The midwinter meeting of the council was held at Johns Hopkins University, Baltimore, December 28, 1900. The general meeting for 1901 will be held at Denver, Col. The association publishes annual proceedings, and beginning with 1901 adopts the journal *Science* as its organ. President, R. S. Woodward, Columbia University, New York; permanent secretary, L. O. Howard, Cosmos Club, Washington, D. C.

ADVENTISTS, familiarly known as Millerites from the name of their founder (William Miller, 1782-1849), whose belief in the proximate advent of Christ became one of the tenets of the sect. The form of church government is uniformly Congregational, though varying doctrinal views are held by the six branches, which are known as follows: (1) Evangelical, with 34 ministers, 30 churches and 1147 members; (2) Advent Christians, with 883 ministers, 580 churches and 25,816 members; (3) Seventh-Day Adventists (see below); (4) Church of God, a seceding branch of the last, with 19 ministers, 29 churches and 647 members; (5) Life and Advent Union, with 60 ministers, 33 churches and 3000 members; (6) Church of God in Jesus Christ, with 94 ministers, 95 churches and 2872 members.

ADVENTISTS, SEVENTH-DAY, the most numerous branch of the Adventists, founded at Washington, N. H., in 1844. Though they hold that the second advent is to precede the millennium, they do not presume to predict exactly its date. Their strength in the United States, reported in 1900 as 372 ministers, 1470 churches and 55,316 members (an increase in membership during the last decade of over ninety per cent.) by no means shows the extent of the denomination, for their missionary efforts, now directed over 39 fields, have resulted in a large sectarian following outside of this country. Statistics for the entire church place to its credit 524 ministers, 1874 churches and 74,471 communicants. The Seventh-Day Adventists now control, in all, 36 educational institutions, and the issues of their 13 publishing houses are quite extensive. Battle Creek, Mich., is the location of their denominational headquarters.

ADYE, Sir JOHN MILLER, G.C.B., a colonial commandant of the Royal Artillery, died August 26, 1900, at the age of 81. He served during the Crimean War and was adjutant-general of the Royal Artillery during the Indian mutiny. After nine years of hard service he returned to England, and in 1870 was appointed director of artillery at the War Office. During this period of reforms he was associated with many of the alterations brought about by Lord Cardwell. Being

appointed royal military commander at Woolwich in 1875, he resigned five years later on being appointed surveyor-general of ordnance, and in 1882 he was chief of staff and second in command of the forces in Egypt. His success brought him high honors from the government on his return, and in 1883 he was appointed governor of Gibraltar. After 1886 Sir John Adye held merely the honorary appointment of colonel-commandant. He published accounts of his expeditions, including *Recollections of a Military Life* (1895), and a volume on *Indian Frontier Policy* (1897).

AERIAL NAVIGATION. The most notable feat in aerial navigation accomplished during 1900 was undoubtedly the work of Count Zeppelin of Germany with his specially designed dirigible balloon, or "air-ship." As is well known, dirigible balloons are balloons arranged with steering apparatus or propelling machinery, or both, by which the direction of their flight can be regulated at will. To appreciate the success of Count Zeppelin's air-ship it needs to be compared with previous dirigible balloons. Practically speaking, there are only two previous sets of experiments with this type of air-ship which are at all comparable with those of Count Zeppelin—namely, those of Gaston Tissandier, carried out in 1883, and the French army tests of 1884-85. Tissandier's balloon was shaped like a very blunt cigar, with both ends pointed, and was 29 feet in diameter and 91 feet long. The envelope was made of thin cloth covered with a varnish impermeable to the air, and from it was suspended a car by the usual means of a netting of ropes. The car contained an electric battery which supplied current for operating a two-blade screw propeller, 9.25 feet in diameter. A triangular-shaped rudder of silk was fitted to the balloon above the screw, in much the same relative position as the rudder of a screw-propelled steamship, and was arranged to be operated from the car. The total weight of the apparatus, exclusive of the ballast carried, was 1800 pounds. With the propeller making 180 revolutions per minute this balloon was able to maintain its position against a wind blowing 6.8 miles per hour, and when travelling with the wind could be turned to the right or left with considerable ease. The balloon used in the French army tests were modelled after Tissandier's, but was somewhat longer in comparison with its diameter. Seven ascents were made with this balloon, in five of which the voyagers were able to return to their starting point, and in one instance a velocity of 13 miles per hour was attained independently of the wind.

According to authentic descriptions, the air-ship of Count Zeppelin consists of a row of 17 balloons confined like lozenges in a package in a cylindrical shell 420 feet long and 39 feet in diameter, with pointed ends. In size, therefore, this ship for navigating the air corresponds with a very fair-sized ocean steamer. This nest or group of balloons serves to lift the structure in the air, where it is driven forward or backward by means of large screw propellers operated by benzine engines. To steer the air-ship a pair of rudders, one forward and another aft, are employed. The accommodations for the crew and passengers are provided by two aluminium cars, suspended forward and aft below the body of the shell. From these cars, which are connected by a speaking tube, all the machinery of the air-ship is operated. The ship is made to move in a horizontal or inclined direction by means of a weight which slides back and forth on a wire cable underneath the balloon shell. When the weight is far aft the bow of the air-ship points upward and its movement is upward; when it is far forward the bow points downward and its movement is downward, and when it is exactly in the centre the vessel remains on an even keel. The cars are each 20 feet long and $3\frac{1}{3}$ feet high. The framework of the shell is aluminium wire, covered on the top with soft ramie fibre, coated with pegamoid, and on the bottom with light silk. The 17 gas bags, made of a special cotton material, are all separate from each other, but only 4 have outlet or discharge valves. The Daimler gas-engines are of 16 horse-power each, and one is placed on each car. Each engine operates 2 four-blade screw propellers, 3.75 feet in diameter. Structurally this air-ship is a most ingenious combination of lightness and strength. At the first trial, on July 2, 1900, with 5 persons in the cars, it rose 1300 feet in the air and travelled $3\frac{3}{4}$ miles in 17 minutes in the direction desired. An accident to the sliding weight and to one of the rudders caused a descent to be made, which was accomplished with perfect safety. At a succeeding trial, on October 17, 1900, the air-ship attained a height of nearly 2000 feet, and there remained poised for 45 minutes. It then made a series of tacks, and described a circle of about 6 miles' circumference. The wind exceeded a velocity of 7 miles per hour, and the air-ship made headway against this wind for a considerable distance. After remaining in the air for about 1 hour the ship descended to the surface of Lake Constance, over which all the tests had been made, and was towed to its shed. In steering, stability, and equilibrium the test was pronounced very satisfactory.

On a far less extensive scale than the Zeppelin air-ship is the dirigible balloon of M. de Santos-Dumont, which consists of a cigar-shaped cylinder, containing hydro-

gen gas and carrying a framework, on which is placed the machinery and a seat for the aeronaut. A gasoline motor, somewhat similar to those used in motor cycles, is employed to turn a large propeller made of aluminium and steel and coated with silk. The operator uses pedals and a crank-shaft to start the motor, after which it takes care of itself. The first motor designed for this balloon was found inadequate in power, so a second was constructed, which is remarkable in that it supplies 16 horse-power and weighs but 92 kilogrammes, or but $5\frac{1}{2}$ kilogrammes to the horse-power. M. Santos-Dumont has been working on air-ships of this form for several years, but the present one embodies a number of important structural and other improvements, and has been favorably criticised. In a navigable balloon devised by M. Roze 2 cylinders are placed side by side in the same horizontal plane, with the operator suspended between them. There are vertical propellers to regulate the ascent and descent, as well as horizontal propellers which move the balloon through the air. In Russia, Dr. Danilewski has constructed an air-ship which consists of a vertical cylindrical balloon, pointed at either end and having a series of controlling planes suspended below it, together with the steering and controlling mechanism. For this balloon facility of ascent and descent has been claimed, and the machinery is operated by the feet, as in the case of an ordinary bicycle. Much interest has been created in Europe in navigable balloons, inasmuch as M. Deutsch has established a prize of 100,000 francs for the most satisfactory solution of the problem of aerial navigation.

Aside from the experiments of Count Zeppelin and of the other inventors mentioned, the value of aeronautics has had very little of striking interest to furnish to the public during 1900. The various experimenters in mechanical flight, as distinguished from balloonists, who were so active a few years ago, do not seem to have done anything of note during the year. This is rather unfortunate, as there are many high authorities in aerostatics who look upon mechanical flight as the future method of navigating the air, if it is ever navigated successfully in any such sense as the water is now navigated. These authorities point out with much force of reason that every successful result achieved with dirigible balloons has been attained in very light winds, and that contrivances of this sort are altogether too unwieldy and offer too much surface to the attack of the wind to be practicable as vessels for navigating the air except under the most favorable conditions.

Balloons at the Paris Exposition.—At the Paris Exposition during the summer the subject of aeronautics aroused considerable interest. In addition to a historical exhibit of objects and literature connected with aerial navigation, a number of practical tests were made with satisfactory results. The ascents were made from the annex at Vincennes at intervals during the exposition, and a large number of aeronauts were represented among the competitors. On September 30 a number of balloons ascended in a trial to determine which could travel the greatest distance. M. de Castillon de Saint-Victor, in the balloon "l'Orient," descended at Gasdorf in Schleswig-Holstein. M. Juchmès, in "Touring Club," reached Warburg in Westphalia; M. Blanchet, in "Zenith," made Valbur, near Nijmegen, in Holland; M. de la Vallette, in "Le Réve," arrived at Bois-le-Duc in Holland; M. Balsan, in "Saint Louis," Danzig, in Prussia; Jacques Faure, in "Aero Club," Mamlitz, in Posen, Germany, and Count de la Vaulx made his descent at Wlozlawek, a city on the Vistula, in Poland, being the first French aeronaut to reach Russia on a balloon voyage. This trip of Count de la Vaulx consumed 21 hours, yet occupied less time than the through express on the railway, which requires 24 hours for the same trip. On the following Sunday there was a competition for distance and time in the air, in which the following aeronauts took part:

	Distance Travelled.		Time.	
	Kilometers.	Miles.	Hrs.	Min.
M. de la Vaulx.....	1925	1185	35	45
M. Balsan.....	1350	838	27	15
M. Faure.....	950	590	19	24
M. Maison.....	650	404	16	30
M. Hervieu.....	585	363	18	58
M. Juchmès.....	550	342	16	35

Count de la Vaulx again descended in Russia, this time at Korostichef, and this voyage represents the world's record for distance travelled by a balloon. He received the grand prize in aeronautics and was also awarded a gold medal for being the first Frenchman to reach Russia in a balloon.

AFGHANISTAN, an Asiatic monarchy lying south of Russian Turkistan and between Persia and India. The seat of government is at Kabul.

Area and Population.—According to a final delimitation, the boundaries, which formerly for the most part were undefined, now include within the country the provinces of Kabul, Herat, Turkistan, and Kandahar, and the Badakshan district, the aggregate area of which is probably something over 215,000 square miles, and the population about 4,000,000. Except where irrigation is employed the country for the most part is bleak and infertile. The inhabitants, who are mostly Mohammedans of the Suni sect, comprise several races or tribes, of which the Duranis are the most influential and the Ghilzais the most numerous. The Tajiks, who are less inclined to nomadism than the other tribes, are regarded as the original Persian stock.

Government.—Theoretically, absolutism is the form of government, the power resting with the ameer; the potentate since 1880 has been Abdur Rahman, who is a grandson of Dost Mohammed, the founder of the present dynasty. The ameer stands firm against the encroachment of other powers upon his territory, but as far as possible wishes to avoid foreign complications, and accordingly he has no foreign diplomatic service, except a political agent at Calcutta, and accredits no foreign representatives except a British resident (who, however, must be a Mohammedan) at Kabul. In return for British protection and an annual subsidy of 1,800,000 rupees from the British Indian government, he is bound to submit to that government for approval any communications he may propose to send to a foreign power. The amount of the annual public revenue is unknown; taxation absorbs from one-tenth to one-third of the country's produce, according to the advantages of irrigation. Extortion and dishonesty are prevalent, though the laws, if enforced, would be fairly satisfactory. The provinces are administered by governors. Accurate statistics of the military strength of Afghanistan are not available, but it is known that Abdur Rahman has done much to increase his defensive strength, the number of men in the regular army at present being estimated at 44,000. Besides these there are reserve forces—in fact, the character of the people is such that a large part of the male population might readily be placed on a fighting basis. Of greatest importance, then, is the question of equipment, which is discussed in a succeeding paragraph.

Industries and Commerce.—Though nomadic in disposition the inhabitants give considerable attention to agriculture, raising wheat, barley, rice, millet, arzun, lentils, maize, fruits, peas, and beans. Madder, asafoetida, and the castor-oil plant are abundant. Copper is said to occur in northern Afghanistan, and lead, iron, gold, and precious stones in other parts of the country. The principal manufacturing industry is weaving, the products being silks, carpets, and articles made of camel's and goat's hair. The exports include horses, grain, wool, asafoetida, silk, cattle, and hides; the imports: cotton goods, dyeing materials, sugar, and tea. Figures showing the total value of Afghan trade are not available. There are no railways in the country, and most of the roads are designed for the caravan and not for wheeled vehicles. Of the principal trade routes the following may be mentioned: roads from Mashad and from Bokhara to Herat; from Bokhara to Kabul; from Herat to Kandahar; from Kabul over the Khaiber Pass to Peshawar, the terminus of the Indian railway system. But at present the significance of Afghanistan is political, not commercial; its only real importance lies in the fact that it is a buffer state between the British and Russian empires—a "poor goat," as the ameer himself has expressed it, "at which a lion from one side and a terrible bear from the other side are staring, and ready to swallow at the first opportunity afforded them."

Progress under Abdur Rahman.—The present ameer is a man remarkable not only for his ability, but for his ceaseless interest and effort in behalf of his country—a country whose inhabitants are distinctively quarrelsome, treacherous, and difficult to govern. Formerly the sovereignty of an ameer was recognized outside of the region of Kabul only during sporadic periods of intimidation; perhaps the present is also such a period, but the authority of Abdur Rahman extends over a greater territory and seems to tend toward a more complete unification than that of his predecessors. During his reign not only have his territories been perhaps trebled in size, and various tribal chieftains, who were wont to claim sovereignty in their own right, brought under his authority, but the formerly vague and undefined boundaries of Afghanistan have been definitely demarcated, so that now no nation can advance beyond certain lines without violating established treaties.

In internal affairs the ameer, who is thoroughly feared by his subordinates, has brought about many reforms, apparently for the popular welfare. He has not only reorganized the army, which he declares is solely for defensive purposes, but he has established at Kabul factories capable of turning out 2 field guns weekly and 15 rifles and 20,000 cartridges daily, so that in 1900 his supply of breech-loading rifles was said to be sufficient for the equipment of 50,000 men. The ameer has effected public improvements by building roads and bridges and digging irrigation canals, which are invaluable aids to prosperity in a naturally arid country like Afghanistan. He has encouraged industry and got people to work, more than ever

before, at some regular occupation. He has established courts of justice, raised the status of woman, and ameliorated the condition, if not destroyed the existence, of slavery. To the introduction of railways and telegraphs, however, the ameer is notoriously opposed, his reason being that he fears these means of communication might be of more service to foreign invaders than to his own soldiery.

The Afghan succession is a subject of much concern, both to Afghan and to British and Russian authorities, who fear the recurrence of anarchy when the strong hand of Abdur Rahman is removed. Any one of three conditions, in previous cases, seem to have been sufficient for effecting the selection of an ameer—namely, approval and support of the nation, nomination by the preceding ameer, and primogeniture. All these conditions conspire in the case of Abdur Rahman's son, Prince Habibullah Khan. Russia, however, is believed to favor the candidacy of Ishak Khan, son of the late Ameer Azam Khan and formerly governor of Turkistan, or of Ishak's son, Ismail Khan. And here may come trouble. In 1900 Abdur Rahman published his autobiography, which caused considerable interest.

Early in 1900 the massing of Russian troops on the Kushk frontier, south of Merv and some 50 miles north of Herat, numbering in February about 20,000, occasioned some apprehension in England, as it was feared that possibly the movement looked not only toward the furtherance of Russian power in Persia, but, in view of Great Britain's war in the Transvaal, toward an expedition against Herat in Afghanistan, now under English influence. In April it was reported that the Russian garrison on the Kushk frontier numbered about 3000. The Russian movement caused the ameer so much apprehension that he appealed to Great Britain for protection. The latter government paid little attention to the appeal, and the situation for the time being, at least, grew less serious. Russia denied any purpose of military encroachment, stating that the massing of the troops was merely a movement for tactical practice. About June 1 a cholera epidemic broke out at Djebal Abad and Kabul, and rapidly increased in severity. In a few weeks the ameer left Kabul and did not return until early in August, when the disease had abated. In the meantime, however, the disease had been carried to the eastward, and many important towns were reported to be affected. The number of deaths in Kabul was about 4500.

AFRICA is the largest continent except Asia. The total estimated area is nearly 12,000,000 square miles, some authorities placing it at 11,874,000 square miles and others at 11,908,000 square miles. According to the enumeration given below, the total area is 11,803,084 square miles, which may be regarded as somewhat too small, as it is probable that the figures for the Sahara do not include certain desert tracts in the eastern part of that region. Most, if not all, of the figures given for the areas of African countries are nothing better than careful estimates, while some are merely approximations. With regard to the population the data are even less definite, but the total given below—about 158,670,000—is probably as nearly correct a figure as can at present be ascertained. The discrepancies in the estimates involving the greatest number of inhabitants are seen in the various figures given for Nigeria and the Congo Free State, estimates of the former ranging from 25,000,000 to 40,000,000, and of the latter from 8,000,000 to 30,000,000. The last figure is the official estimate of 1896, and, accordingly, is used in the table. It will be seen that less than one-eighth of the area of Africa comprises independent countries. The largest of these, the Congo Free State, is only nominally independent, and it is not unlikely that formal annexation will be declared by Belgium. The sultanate of Morocco is being encroached upon by the French, who, it is said, wish to extend the sovereignty of their government over the entire country. Liberia is small and unimportant, and there is no indication that it will be molested by the Powers of Europe. The present status of Abyssinia seems secure, but its ultimate absorption by France and Great Britain is by no means impossible. All Africa, practically, seems destined to be governed by Europe. The following table shows: the African states existing under an independent government, including the Congo Free State, which is administered by the King of the Belgians; the states held as colonies, protectorates, or other dependencies by European Powers; and the states under the "influence" of European Powers. The only examples of the last class are Egypt and the Egyptian Soudan, which, though nominally belonging to Turkey, are practically under British administration, and Bagirmi, a Soudanese state that practically has not yet come under French authority.

		Area.	Population.
INDEPENDENT STATES.	Abyssinia	150,000	3,500,000
	Congo Free State	900,000	30,000,000
	Liberia	75,000	1,500,000
	Morocco	219,000	4,000,000
Total		1,344,000	39,000,000



AFRICA.

Capitals thus: Railroads Finished
Canals thus: Proposed

Scale of Statute Miles.
0 100 200 300 400 500 600 700 800 900 1000
1609 METERS TO ONE MILE.

Kilometers.
0 200 400 600 800 1000

- | | | |
|----------------------------------|-------------------------------------|---|
| <input type="checkbox"/> British | <input type="checkbox"/> Italian | <input type="checkbox"/> Turkish |
| <input type="checkbox"/> French | <input type="checkbox"/> Portuguese | <input type="checkbox"/> Belgian |
| <input type="checkbox"/> German | <input type="checkbox"/> Spanish | <input type="checkbox"/> Independent States |

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		Area.	Population
BRITISH.	Basutoland	10,293	250,000
	Bechuanaland Protectorate.....	213,000	200,000
	British Central Africa Protectorate...	42,217	900,000
	British East Africa.....	1,000,000	2,500,000
	Cape Colony.....	220,871	2,044,821
	Gambia	2,769	214,266
	Gold Coast.....	40,000	1,473,882
	Lagos	22,000	3,000,000
	Mashonaland	114,000	270,000
	Matabeleland	60,728	155,000
	Natal	22,519	721,365
	Niger Coast Protectorate.....	4,000	.....
	Nigeria	350,000	25,000,000
	Orange River Colony.....	48,326	207,503
	Rhodesia, Northern.....	575,272	.....
	Sierra Leone.....	4,000	75,000
	Somali Coast Protectorate.....	68,000	240,000
	Transvaal	119,139	1,094,156
	Uganda	120,000	3,920,000
UNDER BRITISH INFLUENCE	Walfisch Bay.....	430	768
	Zanzibar	1020	200,000
	Zululand	12,500	181,000
	Total.....	3,031,084	42,647,761
	Egypt	400,000	9,734,000
	Egyptian Soudan.....	950,000	10,000,000
	Total.....	1,350,000	19,734,000
FRENCH.	Algeria	184,474	4,430,000
	Algerian Sahara.....	123,500	50,000
	Dahomey	50,000	1,000,000
	French Congo.....	425,000	12,000,000
	French Guinea.....	48,000	1,000,000
	French Soudan.....	300,000	2,500,000
	Ivory Coast.....	100,000	2,500,000
	Sahara	1,684,000	2,500,000
	Senegal	120,000	2,180,000
	Somali Coast and Obock.....	5,000	22,000
	Tunis	50,840	1,500,000
	Wadai	170,000	2,000,000
UNDER FRENCH INFLUENCE	Total.....	3,260,814	31,682,000
	Bagirmi	65,650	1,000,000
GERMAN.	Cameroon	191,130	3,500,000
	German East Africa.....	384,180	8,000,000
	German Southwest Africa.....	322,450	200,000
	Togoland	33,000	2,500,000
	Total.....	930,760	14,200,000
PORTUGUESE.	Angola	484,800	4,119,000
	Portuguese East Africa.....	301,000	3,120,000
	Portuguese Guinea.....	4,440	820,000
	Total.....	790,240	8,059,000
ITALIAN.	Eritrea	88,500	450,000
	Somaliland	100,000	400,000
	Total.....	188,500	950,000
SPANISH.	Rio d'Oro.....	243,000	100,000
	Spanish Congo.....	1,000	7,000
	Total.....	244,000	107,000
TURKISH.	Egypt and Egyptian Soudan (enumerated above).....	.....	.....
	Tripoli (including Benghazi)	398,900	1,300,000
	Total Africa.....	11,803,948	158,699,761

The countries named above are treated in separate articles under their respective titles, excepting Algerian Sahara, Bagirmi, Rio d'Oro, Sahara, Spanish Congo, and Wadai; it should be noted that "British East Africa" may be found under "East Africa, British," and "East Africa Protectorate." The often-used term, "British Central Africa" (not the protectorate) is included in "Rhodesia, Northern," and southern Rhodesia comprises the two provinces Mashonaland and Matabeleland. The figures given above for Rio d'Oro have reference to the territory before the new delimitation pursuant to the Franco-Spanish convention of 1900, new estimates not being available. (See paragraph Spanish Possessions.) The foregoing table enumerates only the states of Continental Africa, with the exception of Zanzibar, which island protectorate is so near the coast and such an important centre for transit commerce that it may be regarded as a part of the mainland. Few islands of importance lie off the coast of Africa; among those usually included in an enumeration of African territory are the following: British—St. Helena, Ascension (*qq.v.*), and Tristan d'Acunha, in the South Atlantic; Mauritius (*q.v.*), east of Madagascar; and Sokotra, east of the Gulf of Aden; French—Madagascar (*q.v.*), the fourth largest island in the world, lying east of the African coast in the southern Indian Ocean, and Réunion (*q.v.*), Nossi-Bé, Ste. Marie, and the Comoro islands, near Madagascar; Portuguese—Madeira and Cape Verde islands (*qq.v.*), off the north-west African coast, and Prince's and St. Thomas islands in the Gulf of Guinea; Spanish—Canary islands (*q.v.*), south of the Madeira group, and Fernando Po, Annabon, Corisco, and Elobey, in the Gulf of Guinea.

Races.—The inhabitants of Africa may in general be divided into four great races: the Semitic, Hamitic, Bantu, and Hottentot. The two former, which for the most part occupy the northern half of the continent, are classified with the white type of mankind, although in color they range from white to deep brown and black; and the two latter, occupying the southern half of Africa, are in general true blacks. The northern inhabitants are largely pastoral in occupation, except in the Nile valley, the Atlas region, and Abyssinia, where they engage to a considerable extent in agriculture. Except in Abyssinia, where a debased form of Christianity exists, the prevailing religion in the north is Mohammedanism, which is making more rapid progress toward the south than is Christianity, and the indications are that its future influence in Central Africa will be large. Between the Semite-Hamite races and the Bantus are mixed tribes, which cannot be accurately classified with either. The Bantu tribes, divided into hundreds of linguistic groups, occupy the larger part of the continent south of a line running east from the Gulf of Guinea. In religion they practise various forms of fetichism, and in occupation they engage to some extent in agriculture, though in general conditions of poverty prevail. In parts of the Congo Free State cannibalism is said to exist. The Hottentots and Bushmen, whose classification with the true blacks is disputed by some authorities, inhabit the western part of South Africa; the former engage largely in pastoral pursuits and the latter in hunting. Of the uncivilized peoples of Africa the most remarkable for industry and efficiency are the Hausas of Nigeria (*q.v.*) It is said that south of the Zambesi there are 1151 distinct native tribes. Of these the Hottentots and Bushmen are the most degraded, while the Basutos and Zulus are at the other end of the scale. Many Basutos are styled Christian, but even these are semi-barbarous.

British Possessions.—The British colonies comprise two groups—South African and West African, the former being the more important. The South African colonies include Cape Colony, Natal (with Zululand), Basutoland, the Orange River Colony, and the Transvaal Colony, the last two having been annexed in 1900. The West African colonies are Gambia, Sierra Leone, the Gold Coast, and Lagos, situated on the coast between the mouths of the Senegal and Niger rivers. Other British territory in South Africa is the Bechuanaland protectorate and the immense tract known as Rhodesia, which extends northward as far as Lake Tanganyika, and is administered by the British South Africa Company. In 1900 a formal protectorate was extended over Barotseland, under the title of Northwestern Rhodesia. Besides the colonies in West Africa Great Britain has the protectorates of the Niger coast and Nigeria. The East African possessions, which include no colonies proper, comprise the protectorates of the Somali coast, East Africa, Uganda, Zanzibar, and British Central Africa. Egypt, which is nominally a suzerain state of Turkey, is practically administered by Great Britain, and the Egyptian Soudan, re-attached to Egypt in 1898 by the expeditionary force under General Kitchener, may be regarded as British territory.

French Possessions.—France holds more African territory than any other power, but the greater part—the Sahara—is not valuable, and the aggregate number of inhabitants is considerably less than that of the British territories. Excepting a strip along the Mediterranean and perhaps parts of the Congo Free State, Great Britain has claims on the best land of Africa, while the French territory, as Lord Salisbury is reported to have said, "is mostly very light soil." Indications, however,

point to a desire—a desire, indeed, that is already showing itself in action—on the part of France to build up an African empire that will extend from the Mediterranean to the Gulf of Guinea, and that will embrace the present independent state of Morocco. Two important features of this policy in 1900 were the French aggressions beyond the frontier of western Algeria, for an account of which see the article Morocco, and the serious proposal for the continuation of the Algerian railway across the Sahara, which is treated in the succeeding paragraph. Algeria, which is probably the most valuable possession of France, is regarded as an integral part of that country, and Tunis, which is nominally under a bey, Sidi Ali Pasha, is occupied and administered by the French, and will probably be brought into their formal possession. Senegal is a colony administered under the provisions of a decree, while the African protectorates and colonies under French suzerainty are French Soudan (including Wadai), Ivory Coast, Dahomey, French Guinea, French Congo, French Somali Coast and Obock. The French authorities have proposed to form the territory between Insala, on the Moroccan frontier, and Timbuctu into a separate governmental district, under the name of Mauritania. From an economic point of view the French colonies are for the most part unprofitable.

French territory in Africa is more compact than are the possessions of either Great Britain or Germany. There would, accordingly, seem to be for France a smaller need of railway construction, for the railway in a newly acquired and semi-civilized territory is designed not only to augment industrial development, but to form between distant districts a bond that has a political and military significance. But though the French territory in Africa is compact, it is of immense extent, and its valuable regions—along the Mediterranean and in the south—are separated by the Great Desert. Though the project of a Saharan railway originated some twenty years ago, scarcely anything has been done toward effecting it. In 1900, however, the extension of British power in South Africa, as well as the forward policy of the French along the undefined frontiers of Algeria and Morocco, aroused new interest in the railway scheme. It was proposed that the road should be built almost due south from Biskra, which is already connected by rail with Philippeville on the Mediterranean to Timassinin and Amguid, which are on the watershed between the Mediterranean and Niger and about 1100 kilometres (683 miles) from Philippeville. The road would divide at Amguid, the main line going in a southeasterly direction to the Lake Tchad region, and a branch running southwest to the bend of the Niger, probably to Bouroum. The estimated length of the main line from Biskra to Lake Tchad is 3100 kilometres. The engineering difficulties are said to be comparatively few; for long distances the grades are very slight, while the watershed can be crossed at an altitude of 650 metres (2112 feet). It was estimated that the road could be constructed as far as Amguid within a period of two years. French authorities seemed to think that, aside from political reasons, the industrial benefits to be derived would warrant the building of the road. It was pointed out that the Great Desert has many large and fertile oases, while the introduction of the artesian well would redeem much land that is now waste. The road would not only do away with much of the long-distance caravan traffic, which of course is very expensive, but would create new commerce. This trade, according to a French estimate, would amount to over six and a quarter million francs a year. On the other hand, an English authority on Africa did not believe that the country was worth a railroad and that the trade of nomadic peoples in regions largely arid could in no wise support it.

German Possessions.—Germany's occupation of Africa is more recent than that of the other European powers, her first acquisition—Damaraland and Namaqualand, now a large part of German Southwest Africa—dating from 1883. Besides Southwest Africa there are three German dependencies: Togoland, Cameroon, and German East Africa; and, unlike the possessions of France and Great Britain, all four are separate. Togoland borders the Gulf of Guinea between the British Gold Coast and French Dahomey; Cameroon lies at the head of the Gulf of Guinea, between the British Niger region and French Congo; and German East Africa, which is the most valuable German possession in Africa, extends between the Indian Ocean and Lake Tanganyika, with British East Africa on the north and Portuguese East Africa on the south. The German territories, excepting parts of German Southwest Africa, are rich in natural resources, but hitherto their progress has been small.

Portuguese Possessions.—The Portuguese territories—Portuguese Guinea, Angola, and Portuguese East Africa—also lie in widely separated parts of the continent. Portuguese Guinea lies on the Atlantic coast north of French Guinea and landward is entirely surrounded by French territory; Angola, or Portuguese West Africa, borders the Atlantic between the Congo Free State and German Southwest Africa; and Portuguese East Africa, which includes Mozambique and Lourenço Marques, extends inland from the coast of the Indian Ocean and the Mozambique Channel. Not a great deal of progress has been made in Portuguese Africa, but two railways

in Lourenço Marques, the Beira and the Delagoa Bay, promise considerable development in that district.

Italian Possessions.—Italy's hopes of large African possessions were destroyed by her defeat at Adowa in 1896, when she was obliged to recognize the independence of Abyssinia, over which in 1889 she had declared a protectorate. Her African territory now consists of the slightly developed dependency of Italian Somaliland, which extends along the Indian Ocean from the mouth of the Gulf of Aden to the Juba River, the boundary of British East Africa, and of the colony of Eritrea, which borders the Red Sea between the Egyptian Soudan and French Somaliland. There is small indication that Italian influence will become important in Africa.

Spanish Possessions.—The Spanish territory of Rio d'Oro, the area and population of which were formerly roughly estimated respectively at 243,000 square miles and 100,000, was considerably reduced by a convention concluded with France, June 29, 1900. In 1885 the Spanish seized the coast from Cape Blanco to an indefinite point between Cape Bojador and Cape Juby, and called the country Rio d'Oro after a bay thus named by the Portuguese in the fifteenth century, although neither gold nor a river were found in that locality. In 1886 they made a treaty with the inhabitants of Adrar, but subsequently this district came under French influence. The convention of 1900 defines the boundary as running due east from Cape Blanco to about the 13th meridian, thence northwest to the vicinity of Sebkhah Ijil, a dry salt lake, thence east to the 12th meridian, with which it coincides as far as Morocco. The boundary westward from the 12th meridian to the ocean is still undefined. The same convention settled the question of Spanish territory on the Gulf of Guinea, south of Cameroon. France never recognized the Spanish title to this district, allowing only the islands Elobey and Corisco as belonging to Spain, but the latter power, though never exercising any jurisdiction there, claimed that its rights extended inland almost to the Ubangi. The new agreement gives Spain about 1000 square miles, touching Cameroon on the north.

Turkish Possessions.—Turkish territory in Africa consists of Egypt and of the province of Tripoli, including Benghazi, or Barca, on the Mediterranean. British authority, however, is paramount in Egypt, which, accordingly, for practical purposes may be regarded as British rather than as Ottoman territory. To a still greater extent is the Egyptian Soudan, nominally under the control of Egypt, administered by the British government.

Independent States.—Within the territory now recognized as being under the dominion or protection of European powers there are many districts ruled by native kings or chiefs. One of the most remarkable of these native kingdoms is that of the Hausa race, whose capital, Kano, in northern Nigeria, is said to be a well-governed city of 100,000 inhabitants. At the beginning of 1900 the independent states of Africa were six in number, and consisted of the sultanate of Morocco, bordering the Atlantic and the Mediterranean; the kingdom of Abyssinia, lying east of the Soudan region and separated from the sea by Italian, French and British possessions; the republic of Liberia, on the Atlantic between Sierra Leone and the Ivory Coast; the Congo Free State, embracing an immense portion of equatorial Africa; and the Orange Free State and the South African Republic, surrounded by the British South African possessions and the Portuguese district of Lourenço Marques. As a result of the Anglo-Boer War these last two republics were annexed in 1900 to the British Empire, the Orange Free State becoming in May the Orange River Colony and the South African Republic becoming the Transvaal Colony in September. The Congo State, though nominally free, is a despotism under the King of the Belgians and his officials. According to an agreement made by Belgium and the Free State in 1890, the former was given the option of annexing the latter in February, 1901.

Production and Commerce.—Besides products native to tropical and semi-tropical climates, there are many crops of the temperate zone, such as wheat, barley, corn, rice, and grapes. Only a small per cent. of the tillable land of the continent is under cultivation, but larger areas are devoted to pasturage, especially in South Africa, where there are large numbers of cattle, sheep, and goats. Coffee, sugar, cotton, and fruits are raised, while from the tropical territories various jungle products, including palm nuts, palm oil, rubber, and ivory, are gathered and exported. The vast extent of Africa and the varying soil, ranging from the sandwastes of Sahara to the swamplands of Guinea and the Congo, result in a great variety of flora. In the Mediterranean region the flora in general is similar to that of southern Europe; the forests are largely oak and the vine, olive, fig, and various cereals are abundant, and in Egypt cotton is raised extensively. South of this region, except in the Nile valley, are the great tracts of desert, which for the most part are devoid of vegetation; oases, however, covered with dense groves of palm trees, are not infrequent. Beyond the deserts vegetation increases until in the moister regions of central Africa are found the great forests and savannas. The flora of the southern temperate

regions is in many respects greatly dissimilar to that of the northern; forests are not extensive, but heathland and "veldt" abound, affording pasturage for cattle and sheep. Hitherto the greatest source of wealth in Africa has been the gold mines of the Transvaal and the diamond mines of northern Cape Colony. During 1900 and the latter part of 1899 work in these mines was interrupted by the Anglo-Boer War. Up to the time of this interruption the total value of uncut diamonds taken from the Kimberley mines since their opening in 1868-69 was estimated at \$350,000,000. Until the outbreak of the war the gold production of the Witwatersrand in the Transvaal had increased annually from 1883, when the metal was discovered, so that the total output was valued at over \$300,000,000. Other metals and minerals occur in various parts of Africa, but they have not yet been developed to any considerable extent. Probably the most valuable of the tropical African products is rubber; the world's production has been estimated at 57,500 tons, of which 24,000 tons are credited to Africa.

Foreign trade is most developed in the Mediterranean countries and in South Africa. In this commerce Great Britain is far in the lead and France is second. The imports are largely cotton textiles and provisions, but in South Africa, up to the outbreak of the Anglo-Boer War, there were large importations of mining machinery and railway materials. The leading exports of northern Africa are cotton, dates, spices, and other agricultural products; of the tropical region, rubber, ivory, palm nuts, palm oil, and gums; of South Africa, gold, diamonds, ostrich feathers, and products of the flocks and herds. The latest available statistics of African trade as a whole were published in 1899; the imports were placed at \$395,296,552 and the exports at \$345,773,454. Figures for the trade of the various countries of Africa are given in the articles on those countries.

United States trade with Africa has rapidly increased during the last decade. Imports and exports, according to the United States Bureau of Statistics, have been as follows:

	Imports from the United States.				
	1890.	1895.	1898.	1899.	1900.
British Africa.....	\$2,953,335	\$7,021,120	\$13,761,552	\$15,424,000	\$19,190,658
Turkey in Africa.....	166,578	103,056	893,869	525,310	1,525,487
French Africa.....	406,996	326,233	690,202	448,404	926,550
Portuguese Africa.....	27,956	419,369	2,050,901	1,214,340	837,868
Canary Islands.....	155,207	204,479	91,728	271,021	270,380
Madagascar.....	.....	156,731	67,517	12,544	28,466
Liberia.....	27,768	24,692	16,837	16,545	27,355
Spanish Africa.....	.....	.....	.....	.....	18,222
German Africa.....	.....	.....	813	708	2,757
All other Africa.....	709,504	278,451	538,061	689,022	156,907
Total Africa.....	\$4,446,964	\$8,539,331	\$18,111,470	\$18,602,594	\$22,979,170

	Exports to the United States.				
	1890.	1895.	1898.	1899.	1900.
British Africa.....	\$370,656	\$1,196,168	\$939,606	\$1,875,766	\$1,187,823
Turkey in Africa.....	759,076	3,987,423	5,809,763	8,685,616	8,074,751
French Africa.....	432,592	409,593	600,892	570,311	478,893
Portuguese Africa.....	31	12,547	16,906	18,469	4,798
Canary Islands.....	50,817	59,469	31,641	14,714	21,070
Madagascar.....	.....	41,584	8,871	3,578	485
Liberia.....	15,987	4,969	6,521	5,970	4,351
Spanish Africa.....	.....	16,973	33	.....	750
German Africa.....	.....	.....	.....	.....	.....
All other Africa.....	1,031,027	1,055,628	723,013	1,071,215	652,865
Total Africa.....	\$2,169,086	\$6,796,296	\$3,137,346	\$11,740,636	\$11,025,306

From 1889 to 1899 the imports from the United States increased in value 304.88 per cent., and the exports to the United States increased 245.92 per cent.

Railways.—One of the most important and noteworthy forms of the movement for the partition and colonization of Africa is railway construction. The following table, compiled from various sources, shows the progress hitherto made. It does not include the proposed French Trans-Sahara line or the projected continuation of

the Cape-to-Cairo Railway between Buluwayo and Khartoum. Certain lines also have been projected for German East Africa.

DISTRICT.	Railway Completed.	Building or Projected.	DISTRICT.	Railway Completed.	Building or Projected.
Abyssinia.....		136	Eritrea.....	17	40
Algeria and Tunis.....	2,361	690	French Guinea.....	342	...
Angola.....	244	....	French Somaliland.....	50	...
Bechuanaland and Matabeleland.....	496	....	German Southwest Africa.....	80	100
Cape Colony.....	2,867	289	Gold Coast.....	48	82
Congo Free State.....	250	1,243	Ivory Coast.....	...	290
Dahomey.....		497	Lagos.....	60	126
East Africa (British) and Uganda.....	452	98	Mashonaland.....	180	...
East Africa (German).....	10	....	Natal.....	592	...
East Africa (Portuguese).....	279	....	Orange River Colony.....	392	...
Egypt.....	1,238	230	Senegal.....	273	...
Egyptian Soudan.....	558	....	Sierra Leone.....	62	80
			Transvaal.....	774	522
			Total.....	11,575	4,313

In addition proposals have been made for the construction of the following lines: From Lake Tchad to Fashoda; from Suakin, on the Red Sea, to Berber, on the Nile; from Loanda, in Angola, to Lake Tanganyika; and from Walfisch Bay across German Southwest Africa to Buluwayo. See CAPE-TO-CAIRO RAILWAY.

A Holy War Threatened.—In the spring of 1900 considerable alarm was felt in some quarters for the peace of northern Africa on account of the "holy war" which, it was reported, was being preached by Mohammed-es-Senussi, who declares himself to be the true Mahdi. This threatened war seemed to be no new project, but its imminence was feared on account of England's military power being largely occupied in the Transvaal. Senussi, who is said to be about 55 years of age and a man of great ability, has been preaching for a number of years, personally and through numerous emissaries, an alleged new form of Islamism that not only has aroused the inborn fanaticism of the tribesmen, but has developed a higher degree of public and private morality wherever it has found acceptance. For a time Senussi taught some 2000 students at Jerabub, north of the Libyan desert, and these and others, it is said, have carried the new doctrines into Tripoli, Tunis, Algeria, Morocco, the oases of the Sahara as far south as Wadai and the Lake Tchad region, and even to Senegambia in the extreme southwest, while eastwardly the new teachers have penetrated as far as Somaliland, east of Abyssinia. There is no doubt that the progress of Islamism has been far greater than that of Christianity among the pagan tribes living to the southward of the ancient Mohammedan countries, and if what is reported of Senussi is true—as to the spread of his teachings and their direct and avowed tendency against Christian occupation and government in Africa—the alarm felt concerning him is not without sufficient cause. The new teachers, moreover, are not simply propagandists, but their movement, according to report, is so organized that a general uprising could be effected within a brief space; and for such an uprising, presumably, stores of ammunition, particularly at Joffo, in Kufra oasis, and at Jerabub, have been gathered.

Protection of Wild Animals.—On May 19, 1900, a convention for the preservation of wild animals in Africa was signed in international conference by representatives of Great Britain, Germany, France, Spain, Portugal, Italy, and the Congo Free State. The region to which the agreement applies comprises the larger part of the continent of Africa. It is bounded on the north by the 20th parallel of north latitude, on the east and west by the sea, and on the south by German Southwest Africa to the Zambesi and thence by this river to the Indian Ocean. The powers above mentioned are pledged to establish by legislation the recommendations of the conference, and the enactments are to remain in force for fifteen years. The need of such action is made apparent by the fact that in regions where civilization has made considerable progress, as in Cape Colony, Natal, Algeria, and along the Nile, the larger wild animals have almost entirely ceased to exist. Indeed, so unscrupulous has been the desire of hunters and tradesmen for the ivory, skins, and plumage of various beasts and birds, and so wanton has been the action of many sportsmen in shooting down hundreds of animals simply to report a "big bag," that numerous species of fauna, whose habitat is not too far inland, are in serious danger of extinction, while the large animals, such as the giraffe, rhinoceros, elephant, and the nobler forms of the antelope, have already been driven far into the interior. Aside from the commendable sentiment that deprecates unnecessary animal slaughter, and the future interests of legitimate commerce which these animals subserve, the question is one of no small moment, as the scientific world

is threatened with the loss of many forms that could never again develop. The principal recommendations of the conference were the following prohibitions: The hunting and destruction of certain rare animals; the hunting of the young of many animals, as well as females accompanied by their young, exclusive of dangerous carnivora; the use of nets, pitfalls, dynamite, etc. To abate the serious killing off of elephants the conference proposed to make illegal the hunting of females and the young; both of these classes carry but little ivory. The most effective of the penalties proposed against offenders seems to be the confiscation, on exportation, of all tusks below the weight of 5 kilogrammes (11 pounds). Of course the obvious and real difficulty of the whole question is to secure a proper enforcement of the laws. Among the prominent members of the conference were Professor Ray Lankester, Dr. Hermann von Wissman, M. Louis Gustave Binger, and Sir Clement Hill.

Events of 1900.—During 1900 public attention was particularly directed to the war in South Africa, which, though still in progress at the close of the year, had resulted in the annexation of the two Boer republics to the British Empire, and had forced President Kruger of the Transvaal to flee to Europe. An account of the war may be found in the article TRANSVAAL. Various native uprisings occurred, but none seem to have been of prolonged seriousness except the revolt of the Ashantis in the Gold Coast (*q.v.*), which continued from the spring to about the close of the year. The activity of the French in West Africa was notable. They continued to occupy oases, and in the spring a French force defeated a body of natives under Sultan Rabah, who was killed. The death of Rabah, who ruled a large part of the central Soudan in what is known as the Lake Tchad region, will facilitate the realization of French authority. The boundary between the French Sahara and Rio d'Oro and that between Abyssinia and Eritrea were defined, while negotiations were in progress regarding the boundary between French Congo and Cameroon and that between Cameroon and Nigeria. Another boundary dispute took place between the Germans and Belgians concerning the Lake Kivu region. See CONGO FREE STATE.

Several exploring parties were at work in Africa during 1900, but though they covered thousands of miles and penetrated to the heart of the continent, few new geographical facts were established. The first journey from the Cape to Cairo was accomplished by an Englishman, Mr. E. S. Grogan, who with Mr. A. H. Sharp left the Zambesi in October, 1898, and travelling by way of the great lakes and the Nile reached Cairo in February, 1900. Mr. Sharp turned east through Uganda and arrived at Mombasa, on the coast of British East Africa. In the latter part of 1899 an expedition under the auspices of the London *Daily Telegraph* was sent out from Cape Colony commanded by Mr. Lionel Decle for the purpose of studying the economic possibilities of those parts of central Africa, particularly British territory, that are still practically unknown. In the middle of 1900 Mr. Decle was on the plateau between lakes Nyassa and Tanganyika. Another British expedition made an examination of Lake Tanganyika in the fall of 1899, and after exploring the Ruwenzori Mountains, one of which was found to be 16,500 feet in height, with the snow line at 13,000 feet; proceeded to Mombasa, arriving there in May, 1900. A large tract in the valley of the upper Zambesi and in the region marking the watershed between that river and the Congo was explored by Major Gibbons, an Englishman, and his assistants. The work of this party was important, as the region explored was one of the least known in Africa. Major Gibbons met the Belgian expedition under Lieutenant Lemaire on the Kasai River, and in January, 1900, he met at Lake Mweru, on the frontier of the Congo Free State and British Central Africa, Mr. Poulett Weatherley, who also was conducting an exploring expedition in that region. Major Gibbons went north by Lake Tanganyika and the Nile Valley, reaching Omdurman in August, whence he proceeded to Cairo and was the second to make the Cape-to-Cairo journey. In August, 1899, Dr. Donaldson Smith set out from Berbera, on the coast of British Somaliland, to explore that country and make certain surveys. Having proceeded through Abyssinian territory and entered British East Africa, he made complete triangulations from Lake Rudolf to Taransole, which town had been reached from the other direction by the surveys of Colonel Macdonald. In March, 1900, Dr. Smith arrived at Fort Berkeley on the White Nile. During the year this river was opened to navigation from Khartoum to Fort Berkeley by Major Peake, who, acting for the government of the Egyptian Soudan, cut a channel through the sudd, the dense plant growth that has been so serious an obstacle to the progress of vessels on the Upper Nile. This clearing of the river is an essential service toward the opening of the Egyptian Soudan, which, as the Khalifa was killed and his army scattered in November, 1899, is now accessible to travellers and British-Egyptian officials. In 1900 Mr. H. H. Austin and others carried on surveys in the Abyssinian highlands. The British government has issued orders for an accurate triangulation of Victoria Nyanza. There are indica-

tions that Abyssinia contemplates an encroachment on the territory of British East Africa, as in 1899 Count Leontieff, the Russian adventurer serving under King Menelek, proceeded southward with the purpose of establishing Abyssinian influence as far south as Lake Rudolf. It was reported that a number of important towns accepted Abyssinian authority. The most interesting journey in British West African territory was that of Bishop Tugwell, who passed through the Hausa country of Nigeria and entered the large city of Kano, where he found that the Mohammedan king is decidedly opposed to the advent of Europeans and especially of Christian missionaries.

In 1900 Dr. Kandt, a German explorer, completed a series of surveys in the region of Lake Kivu, on the borders of the Congo Free State, and another German, Dr. Kohlshütter, carried on experiments in the force of gravity and made surveys in German East Africa. Work was done on the delimitation of Franco-German boundary between Dahomey and Togoland. A Belgian expedition under Lieutenant Lemaire attained valuable results in the region of the Upper Zambesi, parts of the same territory being also explored by Major Gibbons. The French have been active in exploring the Sahara. One expedition, having set out southward from Algeria, reached Zinder on November 22, 1899, which was found to be an important centre for caravan trade. Lake Tchad was reached late in January, 1900, and the lower Shari, not far from its entrance to the lake, about a month later. The expedition met other French exploring parties, and the combined forces defeated and killed Rabah, as noted above. Major Lamy was killed in the battle. See ARCHÆOLOGY.

AFRICAN TRANSCONTINENTAL TELEGRAPH LINE. See CAPE-TO-CAIRO RAILWAY.

AGASSIZ ASSOCIATION, founded 1875, incorporated 1892, for the encouragement among young people of personal work in natural science. It had a membership in 1900 of over 10,000 in the United States and seven foreign countries. It publishes a handbook, *The Three Kingdoms*, and its official organ is the *American Boy*. President, Harlan H. Ballard, Pittsfield Athenæum, Pittsfield, Mass.

AGRICULTURAL COLLEGES. See AGRICULTURE.

AGRICULTURE. The present status of agriculture represents progress in every direction. Agricultural activity during the past year is equal to that of any preceding year, and it is encouraging to note that the publications of the Agricultural Experiment Stations in the United States represent each year more substantial work of a research nature and less of compilation. This is to be expected as these comparatively young industrial institutions grow older, and the questions to be solved become more difficult. The initiatory work of all young institutions that have to present the results of their investigations to an industrial class must of necessity be elementary, but by gradually educating its constituency up to a higher standard, the results of more elaborate research work, containing highly technical features, can be utilized. The advance already made in this direction is quite noticeable in those sections of the United States where experiment stations have been in vogue for some time. The mention of potash, nitrogen, and phosphoric acid in connection with fertilizers, or of proteids, carbohydrates, and fats in relation to stock feeding, would have been Greek to the majority of farmers a few years ago, but at the present time bulletins containing the analyses of commercial fertilizers and animal foods, with discussions on the ratios of combination suitable for the best results, are understood by a large class of farmers. Notwithstanding this there is a general feeling that there is great need at present for the popular elementary instructive class of bulletins for the agriculturalist. It is with this idea in mind that many experiment stations, through their regular funds, or more frequently by means of special State appropriations, are publishing nature leaflets which touch agricultural topics in a simple, instructive, and interesting manner, and to a certain extent agricultural boards are doing the same. The year has witnessed some changes in our agricultural colleges as regards specialization in the work of instruction, and the development of courses suited to the various needs of students. More than ever before the colleges and experiment stations are reaching out beyond the class-room and laboratory to carry useful information to farmers, through farmers' institutes, correspondence courses, and other forms of so-called university extension work. The State of New York, through Cornell University, still carries on an elaborate system of elementary instruction in agriculture and allied subjects through nature leaflets and correspondence, an experiment in rural education which has attracted wide attention. There is at the present time considerable interest manifested in the introduction of studies of an agricultural nature in our common schools. This has already been tried to a certain extent in some places, and there is a tendency to have the experiment extended. The purely agricultural courses of study in our agricultural colleges have never been in an entirely satisfactory con-

dition, on account of the lack of pedagogical arrangement. Attempts, however, are being made to differentiate this subject. There is no subject at the present time in our college curriculum which needs revision so badly, or is so much in need of a pedagogical mind to differentiate it as agriculture. It is a subject rich in teaching material and subject-matter, and this material, when properly utilized, is capable of furnishing an admirable training to students in observation, technique, etc., from the kindergarten grade to the university. There is a demand in experiment stations for better equipped men than formerly; as a result post-graduate courses of a special nature are being introduced into our colleges. The Federal Department of Agriculture has also made provision through its various bureaus for a limited number of graduates of agricultural colleges to study and fit themselves for special lines of investigation. These scholarships are designated "scientific aids," and they are open only to graduates of agricultural institutions or such as are beneficiaries of the national bounties. Graduates in order to qualify themselves for these positions are requested to write a thesis on some subject, or present copies of original scientific work done by them. These scientific aids are entitled to a compensation for their work not exceeding \$40 per month. An important step relating to the advancement of agriculture in the Russian Empire has recently been taken. It was only last year that a large number of agricultural schools of various grades were established in Russia, and more recently provision has been made to facilitate agricultural teaching and practice by the appointment of twenty commissioners of agriculture, in order to promote and improve the agricultural conditions in general. The commissioners will likewise be charged with the administration of the system of government loans on agricultural improvements and bounties for the enlargement of farm industries. Connected with the commissioner's offices will be a corps of agricultural specialists and instructors, whose duty will be to go out among the land-owners and peasants for the purpose of collecting data regarding the actual condition of various branches of agriculture, to diffuse general information on agricultural topics, and to endeavor to improve the methods and practices in vogue. In the course of their visits to the farmers they will give expert advice on questions of management, and they will take active measures toward the repression of insects and fungus diseases. This is a wise step for the Russian government to take, and considered in connection with the establishment of fifty additional agricultural colleges last year, it would seem that Russia is preparing herself for the utilization of her enormous resources, and is bent on retaining her position as one of the great agricultural producers for the world markets.

The experiment stations are much better known to the farmers and general public than the agricultural colleges, and though the colleges are supposed to be purely educational and the stations experimental in their scope, the latter exceed the former in the dissemination of knowledge, if not in the thoroughness and exactness of their training. The stations have very large mailing lists for their publications, and carry on an extensive correspondence with agriculturalists. They conduct numerous experiments at the stations, besides doing a considerable amount of control work, such as the analyzing of fertilizers and feeding material. Thousands of co-operative experiments are annually conducted in the United States, the number and importance of which have materially increased of late, as it is becoming more clearly recognized that the field application in agriculture heretofore conducted on the station farm needs to be supplemented by similar work in numerous other places in order to be of general usefulness to the agriculturalists.

The aggregate value of the permanent funds and equipments of the land-grant colleges and universities in 1899 is estimated to be as follows: Land-grant fund of 1862, \$10,262,944; other land-grant funds, \$1,441,577.38; other permanent funds, \$14,442,194.25; land grant of 1862, still unsold, \$4,062,850.30; farms and grounds owned by the institutions, \$5,543,108.91; buildings, \$16,009,274.53; apparatus, \$1,955,859.21; machinery, \$1,373,696.75; libraries, \$1,854,942.21; miscellaneous equipment, \$1,997,690.07; total, \$58,944,137.61. The number of persons in the faculties of the land-grant institutions in 1899 was 2893. The number of students for the same year was 35,956, of which 6658 were preparatory, 10,399 special and 745 post-graduates. The number of students taking courses in agriculture was 4407, while the remainder were pursuing courses in engineering, architecture, household economy, veterinary science, etc. The graduates for 1899 numbered 2232, and the total number since the organization of these colleges amounts to 39,084. At the present time there are 64 experiment stations in the United States, in addition to those which are now being established in Alaska, Puerto Rico, and the Hawaiian Islands. According to an exhaustive manual entitled *The Agricultural Experiment Stations of the United States*, published by the government to accompany the experiment station exhibit at the Paris Exposition, the experiment station revenues in 1899, received from all sources, were \$1,143,334.95, and the additions to equipment represented \$104,504.62. The number of addresses on their mailing lists for that year was 523,970, and the

number of publications, 16,924. The number of publications issued by all of the stations up to 1900 is approximately as follows: Reports, etc., 549; bulletins, not including press bulletins, meteorological bulletins and nature leaflets, 3926. The first stations established in this country were at New Haven, Conn., and at Berkeley, Cal., in 1875. The United States government, through the publication of the *Experiment Station Record*, a publication of great merit, printed from July, 1899, to July, 1900, 74,891 pages of abstracts of original publications, and brief abstracts or titles were given of 2247 foreign articles relating to agriculture. In addition to the *Record* there is published annually a card catalogue or index to all the experiment station publications in the United States. The total revenue of 73 German stations is given as 2,244,630 marks, or, approximately, \$94,312, which is derived from the general and provincial government, from agricultural and other societies, and from fees for analysis and control work. An International Congress of Experiment Stations was held in Paris, June 18-22, 1900, in connection with the exposition. Seventeen countries in which experiment stations are maintained were represented by delegates, and the convention was presided over by M. Casimir-Perier, president of the Société Nationale d'Encouragement à l'Agriculture. The secretary, Louis Grandeau, in an address paid particular attention to experiment stations of the United States, highly commending their scope, facilities, and the direction of their work. The subjects of soils, fertilizers, field tests, dairy products, analysis of wine, cider, etc., improvements in methods of analysis and investigation, were duly considered. The sixth International Congress of Agriculture met at Paris, July 1-7, 1900, M. J. Meline presiding. The subjects considered were the low price of wheat, agricultural syndicates and speculation, agricultural education in elementary schools and universities, agricultural education for girls, geological formation and agricultural value of soils, bovine tuberculosis, improvement of the sugar beet, the fungus diseases of cereals, coffee, cocoa, sugar cane, etc., and the production of useful breeds of animals, etc. Especial attention was given to the spread and control of fungus diseases, and an international commission was appointed to consider this subject. The American experiment stations made an exhibit at the Paris Exposition, which consisted in part of the following material: 750 photographs illustrating station buildings and work, models of vegetables and fruit, various pieces of apparatus used in agricultural investigation, collection of weed seeds, cotton, dairy bacteria, irrigation appliances, bound publications of the experiment stations, bulletins and reports, and various charts illustrating the results of experimental work.

Investigations in Agriculture during the past year have as usual been directed along many lines. Important results have been published relating to fungus diseases of plants and the methods for controlling them, a treatise on the peach leaf curl, by N. B. Pierce, being an example of such work. The study of insect repression and experiments relating to the introduction of foreign insects and fungus parasites to exterminate animal pests have been made with some degree of success. Plant-breeding experiments have been performed in connection with the orange, cotton, and corn, and experiments relating to the effects of irrigation have been made in the arid regions of the West. Inasmuch as the problem of irrigation (*q.v.*) is an important one, \$50,000 per annum is devoted to these investigations, but only incidental reports as yet have been given of the progress of the work. Promising experiments are being made in underdrainage as a means of reclaiming the alkaline soil regions of the West, and investigations with a view to the adaptability of certain plants to these regions are receiving careful consideration. Much attention has been given to the sugar-beet industry during the past few years, and the regions suitable for the cultivation of this crop are now fairly well known. The year 1900 has been marked by the completion of the largest sugar-beet factory in the world at Salinas, Cal. This factory has the capacity for working 35,000 tons of sugar beets a day. Studies relating to the value of beet pulp or residue from sugar-beet factories have indicated that this material is valuable as a feeding stuff for animals when used in connection with other materials, and the pulp is now being utilized for feeding purposes. Experiments which have been in progress for many years on the cause and prevention of Texas fever have resulted during the past year in the discovery of a successful means of immunizing cattle against this disease, so that high-bred cattle can be taken South for the improvement of the existing stock with very little danger of loss. Soil inoculation for the soy bean has been taken up on an extensive scale in Kansas as the result of the activities of the station, and the most extensive and successful demonstration of its practicability that has been made anywhere has been given. The confirmation of Babcock and Russell's work on the enzymes in milk and the important part which they play in ripening cheese, which has been made by foreign investigators, places our knowledge of the causes and processes involved in the ripening of cheese on a more substantial basis. The work has already suggested the importance of greater attention to controlling the conditions under which cheese is ripened and kept, and

the results have already been applied in a practical way. Among the new plants introduced and tried during the year may be mentioned the following: Russian and Hungarian wheats, which are superior in yield and more resistant to rusts. Australian, European, and Asiatic wheats have also been imported, including the so-called macaroni wheats from southern Europe. Valuable new varieties of oats, rye, barley and buckwheat have also been introduced, as well as some grains from Hungary and superior varieties of the soy bean from Japan. The introduction of the Kiushu rice from Japan in 1898 has proven entirely successful. It is maintained that this variety yields from 100 to 400 per cent. more than any other rice. Its introduction has resulted in the probable investment of \$20,000,000, and has increased the production of rice in Louisiana more than \$1,000,000 per annum. The experiments in tea growing in South Carolina have shown that this plant may be produced with commercial success in certain regions in the South. In Florida an impetus has been given to the growth of cassava, a starch plant which has already been demonstrated to possess value and utility for feeding purposes. Much work has been done toward surveying and mapping the soil areas in the United States, and already 3386 square miles have been surveyed and mapped, the results of such work having recently appeared in a government publication. Especial attention has been given to tobacco soils, and interesting experiments in this connection have recently been made on tobacco in Connecticut, on soils selected because they seemed especially suitable for the growing of a high grade of Sumatra leaf tobacco. The tobacco was grown under cheese cloth, and was of such quality that experts declared it equal to the Sumatra leaf. This tobacco sold in the market at an average price of over 70 cents a pound, some unsorted products bringing as much as \$1.25 a pound, which is a very high price as compared with Connecticut tobacco in general. Much interest is manifested by tobacco growers at the present time in these experiments, and it is expected that there will be many trials made of this method in the coming year. Experiments of this kind are especially interesting as showing how an entirely new line of investigation—namely, the study of the adaptability of crops to the physical properties of the soil, is capable of rendering results of the greatest scientific as well as practical value. The awards made for tobacco exhibited at the Paris Exposition, especially the Turkish tobacco and Sumatra leaf grown in Florida, have done much to stimulate the growing of these tobaccos in this country. The judges rated the American-grown product as high as that grown in Turkey and Sumatra. Studies on the fermentation of tobacco have already suggested a more rational and safe method of handling it, and Loew's discovery of enzymes as the cause of fermentation instead of bacteria is of considerable interest.

Recent experiments, in part under the auspices of the United States Department of Agriculture, on human metabolism by Atwater (*q.v.*), have already attracted wide attention, and steps have already been taken to investigate animal metabolism at the Pennsylvania Station. The so-called Atwater-Rosa calorimeter, which constitutes an instrument of remarkable precision, is to be adopted for these tests, as it is capable of showing 99 per cent. or more of the theoretical heat given off, and other constituents can be measured as accurately as is ordinarily done in a laboratory. Two European governments have ordered calorimeters of this type constructed for experiments with animals. Other lines of investigation undertaken have been on relation to soil bacteria and their relation to crops, effects of fertilizers, dairying, weed extermination, poisonous plants to stock, tuberculosis in cattle, swine plague, hog cholera, etc. In the West Indies, where new experiment stations were established last year, much additional interest is shown in agricultural subjects, and the yield of sugar cane has been increased 37 per cent. by the selection of new varieties for seed. In the European experiment stations similar lines of work are being carried on to a large extent, but taken as a whole the experiments and publications are more technical than in America, and more investigations are being made on such subjects as nitrogen absorption through root tubercles, fertilizer experiments with pot cultures, and animal metabolism. The scientific results, however, of many of the European experiment stations are being utilized in America; a good illustration being seen in the constantly larger use by farmers of leguminous crops for soil covers, etc. It would not be fitting to close an article on agriculture for the year 1900 without mentioning the death of Sir John Bennett Lawes (*q.v.*), of Rothamstead, England, who for over sixty years devoted a large share of his time and thought from a busy commercial life to the solution of problems connected with agriculture.

The twentieth annual meeting of the Society for the Promotion of Agricultural Science was held at Columbia University, New York, June 22 and 23, 1900, in connection with the American Association for the Advancement of Science. Besides the presidential address of W. J. Beal, twenty-six papers were presented upon general agricultural subjects. The fourteenth annual convention of the Association of American Agricultural Colleges and Experiment Stations met at Yale University,

New Haven, Conn., November 13-15, 1900. A number of papers and reports were presented dealing with agricultural, horticultural, botanical, entomological, and chemical subjects, and mechanical arts. Three lectures upon the results of experimental work at Rothamstead, England, were given by Dr. Bernard Dyer, of London. The sessions on November 14 were held at Wesleyan University, Middletown, Conn., to celebrate the occurrence of the twenty-fifth anniversary of the establishment of the Connecticut Agricultural Experiment Station. The section of agriculture and chemistry which meets with the above association also held its sessions and eight papers were presented.

In conclusion, it may be stated that the progress in agriculture during the year 1900 has been satisfactory. It has been to an unusual degree a year of retrospect, as the Paris Exposition and the various congresses held there have led to a study of the condition of agricultural science and practice at the end of the century, as well as to the consideration of its development and evolution. The year is noteworthy also as marking the twenty-fifth anniversary of the founding of the first experiment station in the United States.

•**AIR-SHIP.** See AERIAL NAVIGATION.

ALABAMA, one of the Gulf States of the United States, has an area of 52,250 square miles. The capital is Montgomery. Alabama was organized as a territory March 3, 1817, and admitted as a State December 14, 1819.

Agriculture.—The following shows the production and value of the principal crops for the calendar year 1900: Corn, 29,355,942 bushels, \$17,026,446; wheat, 916,351 bushels, \$815,552; oats, 4,380,754 bushels, \$1,927,532; rye, 14,071 bushels, \$14,493; potatoes, 417,933 bushels, \$342,705; and hay, 94,061 tons, \$992,344. The movement of cotton for the season 1899-1900 aggregated 1,005,313 bales. Federal officials estimated the area devoted to the cultivation of cotton in 1900 at 2,998,000 acres, and the yield at 151 pounds of lint cotton per acre. The bulletin of the National Association of Wool Manufacturers estimated the wool crop as follows: Number of sheep, 160,632; wool, washed and unwashed, 642,528 pounds; wool scoured, 395,517 pounds.

Mineralogy.—The production of coal in 1899, 7,593,416 short tons, valued at \$8,256,462, exceeded that of the preceding year by 1,058,133 short tons, or 16.2 per cent., and the increase in value was \$3,323,686, or about 67 per cent. Jefferson County, which contributes nearly two-thirds of the coal output of the State, showed the most noteworthy improvement in price, the advance being from 69 cents per ton to \$1.08 within a year. The few instances of labor dissatisfaction did not affect the coal-mining industry as a whole. Strikes occurred in ten mines, and the total working time lost was 71,715 days, a little more than 2 per cent. of the total working time made by the 13,485 men employed in the mines. The average tonnage per day per man in 1899 was unusually large, being 2.57 tons as compared with 2.44 in 1898, and 2.38 in 1897.

Alabama, with a production of 2,662,943 long tons of iron ore, valued at \$2,601,609, held third place among the States as a producer of this mineral in 1899. The production was nearly 11 per cent. in excess of the quantity mined in 1898. Of the total product in 1899, 1,911,097 tons was red hematite, giving the State third rank as a producer of this variety, and 751,846 tons was brown hematite, in the production of which Alabama ranked second. Quarrying in 1899 yielded limestone to the value of \$364,636, and sandstone, \$71,675. The estimated yield of gold for 1900 was 131 fine ounces, valued at \$3508.

Manufactures.—The number of cigar factories reporting for the calendar year 1899 was 70, and their combined output was 6,403,082 cigars. There were 57 grain and fruit distilleries in operation during the fiscal year ended June 30, 1900, and the production of fruit brandy was 4018 gallons; amount of spirits rectified, 255,769 gallons; spirits gauged, 704,831 gallons; and fermented liquors produced, 63,090 barrels. Shipments of yellow pine lumber from January 1 to December 1, 1900, aggregated 130,958,261 feet, and the total amount cut during the same period was 130,609,472 feet. The production of pig iron was 1,083,905 long tons in 1899, and 1,184,337 long tons in 1900, an increase for the latter year of 100,432 long tons. In 1900, 15 new cotton factories were established, with 1538 looms and 115,120 spindles.

Commerce.—In the fiscal year ended June 30, 1900, the imports of merchandise at the port of Mobile were valued at \$2,883,934, and the exports at \$13,206,334. The total foreign trade for the year was \$16,115,313, an increase over the year 1898-99 of \$5,485,487.

Railroads.—The new construction of railroads during 1900 aggregated 192.26 miles, giving the State a total mileage of 4239.85.

Banks.—On October 31, 1900, there were 30 national banks in operation and 13 in liquidation. The capital stock paid aggregated \$3,555,000; circulation, \$1,068,665; deposits on September 5 were \$10,933,238; reserve, \$3,104,524; and resources, \$19,-

55,381. The State banks, June 30, 1900, numbered 20, and had capital, \$1,546,500; deposits, \$4,588,607, and resources, \$7,129,164. The exchanges at the Birmingham clearing house in the year ended September 30, 1900, aggregated \$42,597,101, an increase of \$12,381,385 over the preceding year.

Finances.—The annual report of the State auditor shows that the balance in the State treasury, October 1, 1899, was \$161,391; receipts during the fiscal year, \$2,656,350; pension warrants returned to the auditor and cancelled, \$1447; total receipts and balances, \$2,819,188; expenditures during the fiscal year, \$2,198,420; balance, October 1, 1900, \$620,768. The total bonded debt is \$9,357,600, the annual interest on which amounts to \$448,680. This debt is a relic of the "carpet-bag" government, and while there are laws providing for the refunding of the debt, there are none looking to its final extinction. The total assessed valuation of property in 1900 was \$266,893,288; total tax levy, $7\frac{1}{2}$ mills; total general taxes, \$1,467,973.

Education.—In 1899 the school population was 641,900; number of pupils enrolled in public schools, 433,733; average daily attendance, 341,138; number of teachers, 7303. There were 54 high schools, with 3066 students and 151 teachers; 56 private secondary schools, with 2364 students and 158 teachers; 5 public normal schools, with 817 students and 51 teachers; and 2 private normal schools, with 562 students and 38 teachers. Eight colleges and universities for men and for both sexes reported 92 professors and instructors, 1366 students, and a total income of \$108,779; 1 school of technology reported 30 professors and instructors, 356 students, and a total income of \$62,660; and 9 colleges and seminaries for women reported 95 professors and instructors, 797 students, and a total income of \$72,640. The professional schools numbered 6, classified as follows: 3 theological schools, with 12 instructors and 52 students; 1 law school, with 2 instructors and 27 students; and 2 medical schools, with 41 instructors and 238 students.

Population.—According to the United States census, the population in 1890 was 1,513,017; in 1900, 1,828,697; increase during the decade, 315,680, or 20.8 per cent.

Montgomery Conference.—On May 8, 1900, a conference was held at Montgomery, Ala., under the auspices of the Southern Society for the Promotion of the Study of Race Conditions and Problems in the South, whose object was to afford opportunity for a searching discussion of the welfare of the South in its relation to the present condition and future prospects of the negro. Among those who spoke upon the matters involved were Hon. Hilary A. Herbert, ex-secretary of the navy; Hon. Alfred M. Waddell, mayor of Wilmington; Hon. John Temple Graves, of Georgia; Hon. William A. MacCorkle, ex-governor of West Virginia; Dr. Hillis Burke Frissell, principal of Hampton Institute; Hon. J. L. McCurry, ex-minister to Spain; Professor J. R. Straton, of Mercer University; Professor W. F. Willcox, chief statistician United States Census Office; Hon. C. R. Breckinridge, ex-minister to Russia; Dr. Paul B. Barringer, of the University of Virginia, and Hon. W. Bourke Cockran, of New York. The chief questions discussed were: 1. Should the franchise be limited by law? And if so, how? 2. Should the education of the negro be at least chiefly industrial? What advantages and disadvantages does the South receive from negro labor? 3. How far has the agitation for "social equality" increased difficulties and resulted disadvantageously to both races? Are there adequate legal penalties against offences often punished by lynching? Are these offences increasing?

(a) *Franchise.*—The initiatory point made in the discussion of the negro franchise, and one upon which there seemed to be no diverging opinion, was that the North, in following up emancipation by conferring citizenship and the franchise upon the negro, had committed a colossal political blunder whose consequences it had been left to the South to bear. As a result of this measure there followed a "saturnalia of misgovernment," a "malignant attempt to use the negro voter as a pawn in the corrupt game of manufacturing members of Congress." The two races, which, under the domination of one of them, had lived with good-will together, were suddenly arrayed as antagonists. The negroes, obtaining political power, looted the treasury, debauched justice, and furthered the existing industrial demoralization. The ballot had previously been free from fraud; the whites were forced, as a means of political self-preservation, to stuff ballots, intimidate colored voters, and falsely certify to returns. Later, and as opportunity offered, the whites enacted legislation to exclude legally the majority of the colored vote. The whites were now resolved, since the negro in politics was proved to be vicious and incapable, to retain in their own hands the sovereignty of the South. The question, then, was as to the best means of accomplishing this. Hon. W. Bourke Cockran and others advised the South to advocate the repeal of the fifteenth amendment, as this was the logical and straightforward way to present the issue to the country at large. On the other hand, it was pointed out that while such a demand "would again open wide the bitterness of the olden days," it would not result in amendment. The constitution was practically unalterable. "No human right in all the history of

government," said ex-Governor MacCorkle, "is so absolutely guaranteed as the rights under the amendments to the Constitution." The South, furthermore, had no wish to be unfair to the negro. If the negro possessed education, which tended toward good citizenship, and property which practically guaranteed it, he should vote. For under these conditions he would be allied with Southern interests rather than with some alien policy based on race prejudice. A limited franchise of this kind, applicable to both races equally, would "give numerical control to the white man entirely in every State, congressional district, and, with only a few exceptions, in every county in the South." This view, however, was met with the statement that the negro, on account of his inherent mental and emotional instability, should be required to possess higher qualifications than the whites; and that the franchise laws recently passed by Mississippi and other Southern States, discriminating in favor of the whites, were better adapted to existing conditions than an equal franchise.

(b) *Education*.—Much contradictory evidence was adduced as to the value of industrial education for the negro; but upon the use to him of a conventional "liberal" education opinion was unanimous. The negro, generally speaking, could not assimilate the "classics," and to force them upon him merely brought him to despise industrial labor and made of him a loafer or itinerant preacher with an unsalutary morality. This also was in a large degree the judgment of Booker T. Washington (*q.v.*). Nor could it be considered that liberal education had not been adequately tried. Directly after the war many schools had been started for negroes by Northerners, and in addition the South, though possessing but few resources, had within thirty years expended for the same purpose about \$116,000,000. What was now needed were better trained teachers, longer school sessions, and an industrial training co-extensive with academic education. To accomplish this, local taxation would have to be increased and large voluntary gifts solicited. Certainly the negroes themselves could not pay for their education, for the total taxes on their property did not nearly suffice to repay to the South the expenses caused by their criminals alone. But would more extensive industrial education be justified by its results, or was it only a makeshift to be undertaken for lack of a better? On the one hand it was said of industrially trained negroes, instructed in trade departments side by side with the whites, that they led their people in agricultural and industrial pursuits, and commanded the respect and confidence of the best men of both races. Also, that their property holdings were large and that crime among them was rare. On the other hand it was said that ex-slaves and not the present free and industrially educated generation possessed the bulk of the property owned by the race; that, as officially reported in 1890, out of 1243 graduates of 17 colored industrial schools, "3 only pursued the trade for which educated, 12 were farming, 693 were teaching academic schools, and the rest had all joined the non-producing professions and pursuits." "The wealth of the Indies," it was stated, "could not give this entire race technical training any more than it could satiate the appetite of those thriving on the brokerage of philanthropy. Industrial training should be reserved for a more industrious people."

The discussion of the social condition of the negro in his relation to the whites centred largely upon the commission of crimes commonly punished by lynching. It was pointed out that crimes against women had been practically unheard of previous to the war; and that since the war these crimes, which were increasing alarmingly, had been committed, not by ex-slaves, but by the younger generation. The commission of the crimes was to be attributed to a racial animosity which for the first time had opportunity to assert itself. In the old days the cleavage between the races was absolute, but now, with citizenship and political rights, the negroes desired social equality also. Because the whites would not allow this, malice conspired with passion to produce crime. That lynching often followed these crimes was due (1) to the fact that the negroes generally refused to aid in capturing and legally punishing one of their own race, and (2) to the fact that with the negroes a violent and spectacular punishment was the most effective as an example, and (3) to the long delays in criminal procedure. To obviate this last difficulty it was proposed that laws be enacted giving precedence to criminal cases and permitting them to be tried in counties other than those in which the crimes originated. Upon the future of the negro much evidence was adduced to show that it was not hopeful. It was stated that "where higher and lower races met and interpenetrated, only two permanent solutions had been recorded in history; either the lower race had disappeared, or the two had fused." In this case there was comparatively little tendency toward fusion, but that the negro race was deteriorating might be seen (1) by the greatly increasing death rate, due mainly to tuberculosis, syphilis, and typhoid, and (2) by the increased infant mortality and the number of illegitimate births, and (3) by the disproportionately large number of criminals and the gravity of the offenses for which they were indicted. While the figures quoted in connection with these statements

were not denied, other speakers believed that the negroes had, within the short time since the war, prospered exceedingly well. The negroes had labored under great disadvantages, and had been forced to face conditions entirely new to them. Under the stress of competition they would, in the future, be brought into closer relations with the forces of civilization, and racial antagonism would largely disappear. The work of the industrial schools was said to have produced most satisfactory "civilizing results," and these would increase in the future.

Elections.—At the State election, held on August 6, the Democratic ticket was elected by about 70,000 majority, owing to the absorption in many counties of the Populists into the ranks of the Democratic party. The main issue of the election was whether a constitutional convention should be called to frame an amendment to restrict the negro vote. This proposition was carried in the affirmative by a large majority, as the Democrats accorded it an almost solid support. The question of placing Alabama on the same footing as Mississippi, Louisiana, and the Carolinas in the matter of the negro franchise has been agitated in the State for some years. The last Legislature voted to call a convention for this purpose, but upon the representations of Governor Johnston the action was repealed. The early calling together of such a convention now seems a certainty. The vote on the State ticket resulted as follows: Governor, William J. Sanford, by 115,167 votes, as against 28,291 votes cast for the Republican nominee and 17,543 for the Populist nominee. In 1896, when the Republican and Populist parties in the State were united, the Democratic nominee received 128,541 votes and the Republican and Populist nominee, 89,290. The returns for 1900 are taken to indicate that Populism has ceased to be an active political force in the State. As a result of the election, the Legislature for 1901 will consist in the Senate of 1 Republican and 32 Democrats, and in the House of 1 Republican, 8 Populists, and 91 Democrats. The Legislature for 1900 consisted, in the Senate, of 7 Populists and 16 Democrats, and in the House of 1 Republican, 14 Populists, and 85 Democrats. On November 27 John T. Morgan was unanimously elected by each house to succeed himself as United States senator, for the six-year term, beginning March 4, 1901.

State Officers and National Representatives.—State officers for 1900: Executive—governor, Joseph F. Johnson; secretary of state, R. P. McDavid; treasurer, George W. Ellis; auditor and comptroller, Walter S. White; adjutant-general, W. W. Brandon; attorney-general, C. G. Brown; superintendent of education, J. W. Abercrombie; commissioner of education, J. W. Abercrombie; commissioner of agriculture, Isaac F. Culver.

Supreme Court: Chief justice, Thomas N. McClellan; associate justices, Jonathan Haralson, John R. Tyson, Henry A. Sharpe, and James R. Dowdell.

State officers for 1901: Executive—governor, William J. Sanford; secretary of state, R. P. McDavid; adjutant-general, William Brandon; attorney-general, C. G. Brown; superintendent of education, J. W. Abercrombie; commissioner of agriculture, R. R. Poole. Supreme Court—same as in 1900.

Congressional representatives for 1900 (56th Congress): George W. Taylor, J. F. Stallings, H. D. Clayton, F. A. Robbins, Willis Brewer, J. H. Bankhead, J. L. Burnett, Joseph Wheeler, Oscar W. Underwood—all Democrats.

Congressional representatives for 1901 (57th Congress): George W. Taylor, from Demopolis; A. A. Wiley, from Montgomery; Henry D. Clayton, from Eufaula; Sidney J. Bowie, from Talladega; Charles W. Thompson, from Tuskegee; John H. Bankhead, from Fayette; John L. Burnett, from Gadsden; William Richardson, from Huntsville; Oscar W. Underwood, from Birmingham—all Democrats.

Senators for 1900 (56th Congress): J. T. Morgan (until 1901), from Selma; Edmund W. Pettus (until 1903), from Selma—both Democrats.

Senators for 1901 (57th Congress): E. W. Pettus (until 1903), from Selma, and J. T. Morgan (until 1907), also from Selma—both Democrats.

ALASKA, an unorganized territory of the United States, comprising the northwestern part of North America, was purchased from Russia in 1867. Its area, as far as now known, is 531,000 square miles. The seat of administration is Sitka.

Industries.—The chief industry is mining. The estimated production of gold during the calendar year 1900 was 375,922 fine ounces, valued at \$7,771,000; and of silver, 318,400 fine ounces, valued at \$193,224. This is considerably less than the estimated production for the preceding year. Other minerals found in Alaska are lead, graphite, quartz, and copper. Coal in paying quantities has been discovered at Kachemak Bay, on Kenai Peninsula. A considerable area of this coal land has been secured by an eastern syndicate, known as the Cook Inlet Coal Fields Company. This company has invested a large amount in driving tunnels, placing machinery, and constructing a railroad to tide-water. The surface coal is of inferior quality, but at a depth of a few hundred feet a satisfactory grade of coal is mined. The discovery of petroleum on the southwestern coast of the inlet near Cape Douglas has resulted in the formation of a company which has spent a considerable amount of money in

developing their property in this district, and now has a large force at work boring for oil.

The fish industry stands next in importance to that of mining. The statistics of the salmon pack for the season of 1899, as compiled by the Alaska Packers' Association, are as follows: Number of men employed, 3987; number of salmon taken, 9,951,202; number of cases packed, 723,239; number of barrels packed, 13,022. The herds of seals at the various hauling grounds grow smaller each year. The catch during the season 1899-1900 amounted to about 24,000 pelts.

Commerce.—During the fiscal year ending June 30, 1900, the foreign trade of Alaska was as follows: Gold imports, \$8,081,678; gold exports, \$59,000; merchandise imports, \$385,317; merchandise exports, \$566,347; total, \$9,092,342. The imports of gold were \$983,322 less than in the preceding year, and the net decrease in the foreign trade of the year was \$214,638.

Banks.—On October 31, 1900, there was one national bank in operation, with capital, \$50,000, and circulation outstanding, \$12,500.

Vital Statistics. See Articles SMALL-POX; TUBERCULOSIS; TYPHOID FEVER; VITAL STATISTICS.

Education.—The governor of Alaska, in his annual report, states that many communities are totally destitute of educational privileges on account of the failure of Congress to provide the necessary funds. The annual appropriation for the entire Territory is \$30,000. In addition, incorporated towns are allowed to expend for school purposes one-half of the license money collected within their corporate limits. Juneau and Skagway have become incorporated, and their school funds are now ample, but outside of the towns the facilities for education are urgently in need of improvement. During the year 1899-1900 25 public schools have been maintained by the United States Bureau of Education, 29 teachers were employed, and the total enrolment was 1723 pupils. The cost per capita of enrolment was \$17.45. In addition to the government schools, there is a training and industrial school at Sitka, which gives instruction in carpentering, domestic science, painting, tinsmithing, net-making, boat-building, and in the common English branches; there are also mission schools established by various Protestant churches, and by the Roman Catholic Church.

Needs of the Territory.—Governor John G. Brady, in his annual report for 1900, renewed most of his pleas of the preceding year, and laid special stress upon the need for a larger appropriation by Congress for educational purposes; for legislation providing for a modification of the mineral land laws, and for a delegate to Congress, and for legislation which will define the political status of the natives. The native communities are reported to be rapidly taking up the manners and labors of the Americans. They work in the mines, and upon the wharves and steamships, and engage in mercantile pursuits. "In no respect have they been a burden since American occupation of Alaska began. They aspire to citizenship, which will enable them to locate mining claims, take out licenses as steam engineers and pilots, and to compete with the white settlers who are crowding upon them. Their condition at present, owing to an outbreak of pneumonia and the grip, is said to be most pitiable. Moreover, their resources have been seriously curtailed by the whites, who have invaded their territory. Mining claims of the natives have been uniformly disregarded on the ground that their claims would not hold, since they were not citizens of the United States. Legislation is recommended to make these natives citizens."

Civil Code.—On June 6 a congressional bill was approved providing a civil code for Alaska, and establishing competent courts in which the mining-claims disputes, arising from the recent discoveries of gold, might be adjusted. The bill makes Alaska a "civil and judicial" district, whose executive government is vested in a governor, to be appointed by the President, with the consent of the Senate, for four years. The surveyor-general of Alaska, who is also to be ex-officio secretary of the territory, the attorneys, judges, and other responsible officials are likewise to be appointed by the President. A district court is established for Alaska, which is to have general jurisdiction over civil, criminal, equity and admiralty cases. Appeals and writs of error from this court may be taken to the United States Supreme Court if constitutional questions are involved, and if not, they may be taken to the United States Circuit Court for the ninth district. Three judges are to be appointed for the district, one to reside at Juneau, and to hold court alternately at Juneau and Skagway, one to reside at St. Michael's and the third to reside at Eagle City. The judges are authorized to appoint commissioners throughout Alaska, who are to act as justices of the peace, recorders, probate judges and perform other duties, civil and criminal. Due provision is also made for the appointment of marshals and deputy marshals, who shall see that the laws and the orders of the judges and commissioners are duly executed. No provision is made for a general legislative body for Alaska, Congress continuing for the present to act in that capacity. But local self-government is provided for by the section authorizing the incorporation of com-



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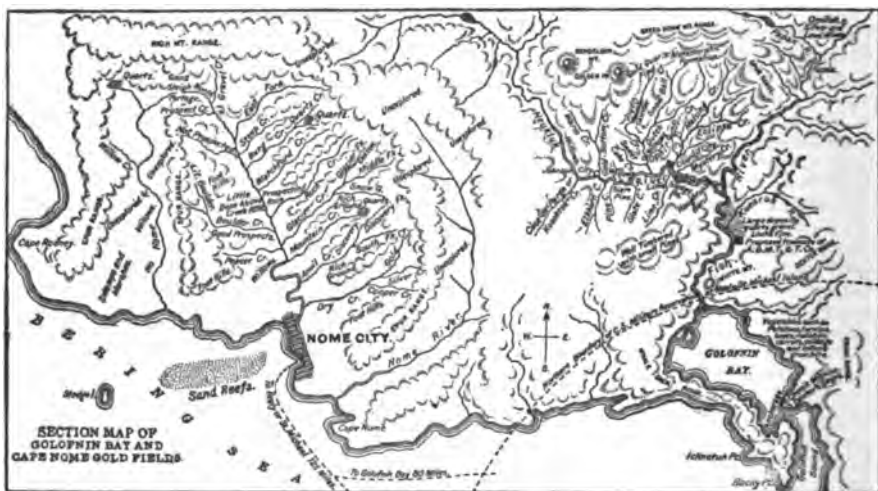
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SCENES AT CAPE NOME.—1. A street in Nome City. 2. Nome City—A general view.
3. Cape Nome Beach, where \$18,000 worth of gold was found.

munities having at least 300 permanent inhabitants. On petition of 60 or more citizens the judge of the district is to authorize a vote of the residents as to whether or not the community shall be incorporated, but upon this question only those possessing substantial property interests are entitled to vote. A community when incorporated is to elect a council of seven, one of whom the council is then to elect mayor. The council may make provision for schools, water, sewerage and other improvements, and may appoint and remove minor officials at their pleasure. The term of the council and of all officers is for one year. It is believed that the simplicity of this form of town government will be well suited to actual needs and conditions in the mining towns. In a report published by the Department of Labor at Washington in July, it was stated that practically all the difficulties and disorders in Alaska were occasioned by opposing mining claims. Many claims had been located by Laplanders, aliens not entitled thereto without having previously announced their intention to become American citizens. The Americans had commonly "jumped" these claims, and taken possession pending a decision from courts not then established. Another cause of difficulty was said by old miners to result inevitably, under the conditions of mining in Alaska, from the United States mining laws. These laws give a man 20 acres (871,200 square feet) for a placer claim, which "is more than one man can possibly work in a long lifetime," owing to the frozen ground and other difficulties. In British Columbia a man is allowed only 100 feet on a creek, which "experience has proved to be quite good enough for one man if the claim is good and more than enough if the claim is not good." The United States laws allow a man 1320 feet along a creek by 660 feet in width, and give him a year from January 1 following the date of location to do a hundred dollars' worth of assessment work therein. It also permits the location of claims by power of attorney. The result is that as soon as a district or creek in Alaska shows any signs of gold, "it is at once staked from end to end and then practically abandoned in the hope that some one will find pay on some part of the creek, and thus give a speculative value to all the other claims." Hundreds who are willing to work are thus thrown out, while speculators travel around and tie up for themselves and friends as much as 100 claims (about 25 miles) apiece. In view of these complaints the mining regulations provided for in the Civil Code are of especial interest. The laws of the United States relating to mining claims, locations, and rights are extended to Alaska, except that lands on Bering Sea, between low and high tide, and land under water beyond low tide, are open to all American miners alike for excavating and mining, subject to such regulations as the district mining camps may prescribe. This exception in favor of the beaches is of much practical importance on account of the large deposits of gold found there in 1899, and of the attempts to "corner" them made by certain enterprising companies. All records of mining claims previously made before the United States commissioners are legalized by the Civil Code, and all records made in good faith in any regularly organized mining district are made part of the public records of Alaska. Detailed rules of procedure are laid down in case of litigation of real property, and the governing laws in the matter are stated with great explicitness. Among other provisions made for Alaska in the Civil Code bill are those imposing licenses upon various kinds of business in order to raise revenues for the government of the territory, and a provision declaring the money rate of interest to be 8 per cent. when no specific agreement as to interest has been made, and limiting the rate which may be charged "by express agreement of the parties" to 12 per cent. All corporations organized under the laws of the United States, or of any State or Territory, must, before doing business in Alaska, file a sworn affidavit with the secretary of the district, stating the amount of their capital stock, the amount of this stock paid in cash, and the amount paid in other things, and in what, and the total assets and liabilities. The seat of government is to be at Juneau, except that it is to remain at Sitka until suitable buildings and grounds are obtained at Juneau.

Cape Nome.—The first authoritative details of the finding of gold on the beach at Cape Nome in the summer of 1899 were made public in 1900. From Cape Nome north for fifty miles to Cape Rodney the shore is bordered by low tundra and marshland, in front of which is a flat sandy beach. Early in July gold was found by an idle soldier on the edge of the tundra toward the beach near the town of Nome. Within a little over a month nearly 1000 were using rockers on the beach with great success. The beach was demonstrated to be enormously rich, and every one caught the beach fever. By October 1 fully 2000 men were working. Although there was much trouble over claims, the general consensus of opinion among the miners allowed every one to mark off for himself from 15 to 25 feet along the beach, wherever unoccupied, and to work it until exhausted. Two principal pay streaks were found: one on the edge of the tundra, from 10 to 30 feet in width, and a narrower one farther down on the beach. Many men were able for a month or more to average \$100 a day. "The best returns reported were secured from an exception-

ally rich spot about 7 miles west of Nome. Here three men, using one rocker, in forty days took out \$32,000. From a hole 12 feet square and 4 feet deep they rocked out \$9000 in three days." About January 1, prospecting about 150 feet off shore seemed to show that dredging operations would prove highly profitable. Plans were also formed to exploit the tundra back of the beach. While no authentic estimate was made of the amount of gold taken from the beach in 1899, the indications were that the output was in the neighborhood of \$2,000,000. It seems to be proved that "gold exists in paying quantities throughout the entire length of the coast from Cape Darby to Cape Prince of Wales, a distance of more than 200 miles." As soon as the season of 1900 opened a rush to Nome began. By August 1, 160 steamships and 70 sailing vessels had arrived, bringing over 18,000 passengers. An additional 4000 came by way of the interior, and there were previously in the town some 3000, making a total population of 25,000. Among those who came were gamblers, "attorneys, prostitutes, and adventurers of all types. Prices at Nome during the summer of 1900 were much lower than they had previously been, but they were still sufficiently high; for example: Scrambled eggs, \$1; drinks of the cheaper kind, 50 cents; a small room over night, \$4; laborers' wages, \$1 to \$2 an hour. While no definite returns were available regarding the output of gold, it was said that the population of Nome and vicinity was altogether too great for all the people to get good returns, and that nearly all the gold which could be obtained by the simple process of rocking had already been taken out. It was also reported that the dredg-



ing operations had not succeeded. Toward the last of the year much dissatisfaction was expressed over the rulings of Judge Arthur P. Noyes, of the federal court at Nome. At a mass meeting held in October delegates were appointed to lay before the government at Washington evidence of the corruption of the court. The matter concerns the litigation over the mining claims, which are nearly all claimed and cross-claimed by several parties each, and which several mining companies are endeavoring to get hold of.

Transportation.—Transportation to the mining districts through ports on the southern coast of Alaska is made easy by a number of good anchorages extending from Cape Spencer to Unalaska and by waterways which are navigable during the entire year by the largest ocean-going vessels. The White Pass & Yukon Railroad permits of travel 112 miles from Skagway on tide-water to White Horse Rapids, where steamboat navigation gives access to the Yukon Valley. But to the north beyond Unalaska, on Behring Sea, transportation is of the greatest difficulty. The Yukon River forms a delta of shifting sand bars extending for hundreds of miles. Ocean-going vessels are forced to lighter all their freight several miles out at sea. At St. Michael Island, the depot for the Yukon River trade, situated about 60 miles north of the Aphoon mouth of the Yukon, the transportation companies have erected warehouses, to which they bring the merchandise taken by lighters from their vessels. From the warehouses the merchandise is loaded on flat-bottomed river steamers, to be taken up the Yukon to various points as far as Dawson City. This extra loading and unloading entails such heavy freight tariffs that mining and building in Alaska are seriously retarded. And the freight rates are made heavy

because in rough weather the ocean vessels are forced at great risk to lay off shore for days or weeks at a time before they are able to unload. The beach at Cape Nome is even worse, as the abundant wrecks of vessels of all kinds testify. A slight wind rolls up a great surf owing to the shallowness of the water, so that vessels must lie two or three miles off the beach and discharge their merchandise by lighters, keeping steam up to run to sea if a wind arises. It has been suggested that the only way in which this difficulty of transportation to the northwest of Alaska can be solved is to establish shipping facilities at Port Clarence to the north of Nome and at the extremity of the Seward Peninsula. From this point a railroad could be built east to strike the Yukon River where it is joined by the Koyukuk River near Nulato. This would make about 250 miles of road and would save 150 miles transportation by the Yukon River. From Nulato the river is navigable to Fort Selkirk beyond Dawson City. Nulato also would furnish a central point from which branch lines could be built to all the principal mining camps either on the coast or in the interior.

The population, according to the United States census of 1890, was 32,052; according to the census of 1900, 63,441; increase during the decade, 31,859, or nearly 100 per cent.

ALBATROSS EXPEDITION. See ZOOLOGICAL STATIONS (paragraph Expeditions).

ALCOHOL. The following figures, approximately correct, are published in the July 19, 1900, issue of the *Allgemeine Zeitung*, stating the consumption of alcoholic beverages in several countries:

PER CAPITA CONSUMPTION IN LITRES.

	Wine.		Beer.		Whiskey.	
	1898.	1897.	1898.	1897.	1898.	1897.
Great Britain.....	1.9	1.8	144.9	142.7	4.7	4.6
Germany.....	3.5	6.1	123.0	116.0	8.4	8.6
France.....	112.0	111.0	25.0	24.0	9.4	8.6
Russia.....	—	—	4.1	4.3	4.9	4.9
Austria-Hungary.....	—	12.0	—	45.0	—	10.0
Switzerland.....	67.0	71.0	67.0	70.0	6.2	6.2
Netherlands.....	—	—	—	—	8.2	8.5
Norway.....	—	—	21.6	17.8	2.6	2.2
Sweden.....	—	—	—	45.0	8.0	7.5
Denmark.....	—	—	94.5	94.5	15.0	14.5
Belgium.....	—	—	207.0	202.0	8.7	9.1
United States.....	1.0	2.0	59.1	55.4	4.2	3.8

An investigation carried on during 1900 by the German authorities at Bonn among pupils in the primary schools revealed some interesting facts. Out of 100 children, 16 refused to drink milk at all. Of 237 children from 7 to 8 years old, every one had drunk wine, beer, or whiskey. Of these, 23 per cent. had never tasted whiskey, but drank wine or beer daily, and 8 per cent. drank a glass of whiskey daily. The pupils who drank stimulants regularly showed the least intelligence, and those who had taken their morning dram of whiskey were inattentive during the morning session. More girls than boys took whiskey with their breakfasts. Several state inebriate reformatories have been established during the year in Scotland, in the effort to save the inebriate before he becomes hopeless, and with a special view to reclaiming certain men in the British army.

The calorimeter experiments of Professor Atwater in 1899, from which he drew the conclusion that alcohol was of use as a food, have been the subject of comment during 1900. Unfavorable criticism has caused Atwater to state that he considers alcohol in small quantities as food in a sense, but in large quantities as a poison. He adds that he thinks that the schools should teach children that alcohol is not a food in the ordinary sense, and that the moderate use of alcohol is dangerous. Dr. H. S. Anders, in the *Philadelphia Medical Journal*, utters the opinion of a vast number of physicians when he says, in spite of the mitigating circumstance that alcohol is oxidized and does yield energy, "I hold that our modern knowledge of alcohol in the human body justifies the belief that in health it is never a food in any sense, be the quantity small or large, but always a poison, biologically or physiologically speaking; that in disease it is neither a food nor a poison, but may be a suitable and helpful drug; and that neither in the last analysis or fullest synthesis, in health or disease, is it a 'partial food,' in small, so-called moderate or excessive quantities. Let us call it what it rightfully is, a drug, and not a drink, a narcotic, and not a tonic. It may take a generation or two before this view becomes as universal as one might wish, but I hope and believe that then it will so become."

Victor Horsley, of London, the eminent neurologist and surgeon, states that the use of alcohol causes degenerative changes in the cells of nerve tissue. He claims that the statements which have been made that small doses of alcohol, such as are frequently taken at meals, have practically no deleterious effect, cannot be maintained. See INSANITY.

ALEXANDER, KING OF SERBIA, marriage of. See SERBIA.

ALFRED, Prince ALFRED ERNEST ALBERT, Duke of Saxe-Coburg and Gotha, second son of Queen Victoria, was born at Windsor Castle on August 6, 1844, and died at Rosenan Castle, Coburg, on July 30, 1900. He was trained for the navy by private tutors, and at the age of 14 was appointed a midshipman upon the *Euryalus*. In 1862, when the revolutionary movement had driven out Prince Otto of Greece, the throne was offered to Prince Alfred, but he was obliged to decline this on account of an agreement concluded between Great Britain, France, and Russia, that no member of the royal families of those powers should be eligible to the Grecian throne. Upon the attainment of his majority Parliament granted him £15,000 a year, with an additional £10,000 upon his marriage. He was also created Duke of Edinburgh and Earl of Ulster and of Kent, and in 1866 took his seat in the House of Lords. Early in 1867 he was appointed to the command of the frigate *Galatea*, in which he cruised around the world. On January 23, 1874, Prince Alfred was married in St. Petersburg to the Grand Duchess Marie Alexandrovna, only daughter of the Tsar Alexander II. The duke and duchess had five children, the eldest of whom and the only son, Alfred, died on February 6, 1899. In 1878 Prince Alfred was made a rear-admiral, in 1882 vice-admiral, and in 1887 admiral. He commanded the channel squadron in 1883-84 and the Mediterranean fleet in 1886-89, and was accounted an excellent seaman. Upon the death of his uncle, Duke Ernest II., on August 22, 1893, Prince Alfred succeeded him as Duke of Saxe-Coburg and Gotha, and took the oath of loyalty to the Constitution. As a German sovereign prince, Prince Alfred surrendered £15,000 of the £25,000 a year granted him by the English Parliament, but he remained an admiral of the fleet by special provision of an order in council dated November 23, 1893. His position was a difficult one, as there existed in Germany a considerable sentiment against the introduction of a "foreigner" among the princes of the empire. Upon the death of Prince Alfred's son the delicate question arose of the succession to the duchy. The Duke of Connaught and his son, Prince Arthur, both declined the honor in favor of the young Duke of Albany, born in 1884, the posthumous child of Prince Leopold, the youngest son of Queen Victoria. The Duke of Albany holds the rank of lieutenant in the Prussian army, and is receiving his education at Potsdam. Until the duke attains his majority the government of the duchy, by the law regulating the succession to the throne, will be vested in the hereditary Prince of Hohenlohe-Langenburg, a son-in-law of Duke Alfred.

ALGERIA, at present probably the most important of the French possessions, is a country on the Mediterranean coast of Africa between Morocco and Tunis, and is regarded by the government of France as a province, or integral part, of that country. The capital is Algiers.

Area, Population, Education.—The country comprises three departments, Oran on the west, Constantine on the east, and Algiers central and most important, of which the aggregate estimated area is about 184,000 square miles and the population (1896) about 4,429,000. The southern boundary is not well defined, and some 123,500 square miles of the Sahara, with a population of 50,000, are claimed by France as belonging to the province. The population consists chiefly of Berbers and Arabs; in 1896 the French inhabitants, exclusive of the army, numbered 318,000 and other foreigners 446,000. In 1897 the population of the city of Algiers was about 97,000; the cities of Oran and Constantine, 85,000 and 52,000 respectively; Tlemçen, 35,000; Bône, 34,500; Mustapha, 31,000. The mass of the population is Mussulman. In 1897 there were 1161 primary schools with 104,000 pupils. At Algiers there is an institution of the university type, with over 500 students; also at Algiers and at Constantine and Oran are *lycées*, with an aggregate of 2000 pupils. In addition there are in the department of Algiers nine colleges with nearly 4000 students. The annual expenditure for education is about \$1,300,000.

Government and Finance.—The chief administrative authority is a governor-general, who is assisted by several ministers and an advisory council, and is largely directed by the French ministries in Paris. Another council votes upon the colonial budget. The legislative power is vested in the French chambers and president. The extreme south of the country is under the military administration of the commander-in-chief of the Nineteenth French Army Corps, which is stationed in Algeria, and comprises about 59,000 men. Each of the three departments is represented by one senator and two deputies in the French National Assembly. The principal sources of revenue are direct taxes, customs, registration, stamps, and

monopolies, and the chief items of expenditure are for administration, public works, agriculture, posts, instruction, etc. The revenue and expenditure for 1898 amounted to 53,557,000 francs and 73,228,000 francs respectively. The estimated revenue and expenditure for 1900 were 55,398,711 francs and 72,144,494 francs respectively. The province has never been self-supporting, and the annual deficits are met by France.

Industries, Commerce, etc.—Agriculture is the chief occupation of the inhabitants. About 7,000,000 acres are planted to cereals; esparto grass is raised on 10,000,000 acres, but the export of this is declining on account of the increasing use of wood pulp in the manufacture of paper. Of the 7,500,000 acres of forest some 4,000,000 acres are covered by the cork-oak; the export of cork is said to equal the aggregate product of Spain and Portugal. Other important products and exports are tobacco, fruits, and hides. Vine culture is increasing. Several minerals occur, the leading mining interests being in iron, zinc and lead, and phosphate of lime. For some time petroleum has been known to exist in Oran, and in the spring of 1900 a French geologist reported the discovery of rich petroleum beds there extending through a district of about 120 miles in length. The leading imports are cattle, cereals, coffee, timber, coal and machinery. In 1898 imports and exports were as follows: Total, \$58,329,040 and \$55,153,357 respectively; of these amounts the imports from France were valued at \$43,528,330 and the exports to France, \$44,702,412. Exclusive of the coasting trade, the shipping in 1898 aggregated 1,101,668 tons in entrances and 1,117,408 tons in clearances. In 1897 there were 5603 miles of telegraph line and in 1898, 1821 miles of railway; this railway system was also extended for 325 miles in Tunis. The French government has taken much pride in its administration and development of Algeria; invaluable improvements have been made in the way of roads, railroads, harbors, and artesian wells and other hydraulic and irrigation works. For an account of the proposed trans-Saharan railway from Algeria, see AFRICA, paragraph French Possessions; for the French encroachments along the Moorish border in 1900, see Morocco.

ALLEN, CHARLES HERBERT, was inaugurated May 1, 1900, as the first civil governor of Porto Rico. The appointment of Mr. Allen, who bore an excellent record, was generally approved as indicating a high standard in the matter of colonial civil appointments. He was born in 1848 at Lowell, Mass., where his father was a successful manufacturer. After graduating from Amherst in 1869, and three years later taking his second degree, he entered upon a business career with his father. Meanwhile he was figuring in politics, in spite of decided preference for private life. He served in both houses of the Massachusetts Legislature; during 1885-89 he was a member of Congress; in 1891 he was unsuccessful candidate for governor of Massachusetts against William E. Russell, and in 1898 succeeded Theodore Roosevelt as assistant secretary of the navy. The combination of his pleasant personality and unquestioned ability overrode the antagonism usually felt by the navy against civilians. His previous business experience made him an excellent financier in the purchase of vessels and war materials for the government during the war, and after peace was concluded his ability for organization was of great advantage to the department. It was with some difficulty that President McKinley persuaded Mr. Allen to give up his position in the navy for the governorship of Porto Rico. The results of his administration and the settling of the tariff question have already been felt in the improvement in trade between Porto Rico and the United States and in the internal conditions of the island.

ALTHEUS, Dr. JULIUS, a distinguished neurologist, died in London, June 11, 1900. He was born at Detmold, in Germany, and after receiving a medical education devoted himself largely to diseases of the nervous system. In 1866 he founded the Regent's Park Hospital for Epilepsy and Paralysis, and at the time of his death was consulting physician. He was considered a leading authority in England on the use of electricity in medicine, and was an extensive contributor to medical literature. He was the author of *Disease of the Nervous System*, *Failure of Brain Power*, *Influenza*, *The Spas of Europe*, *Medical Electricity*, and other well-known works.

ALUMINUM. The production of aluminum* in 1899 amounted to 5,200,000 pounds, the same amount as in 1898, and, as in previous years, it came entirely from the works of the Pittsburgh Reduction Company. The 1900 output will probably be larger because this company has enlarged its plant on account of the great demand.

It now seems probable that aluminum may replace copper to some extent for electrical purposes, as experiments have shown its usefulness in this field, both when pure and when alloyed with copper. A considerable advantage is gained in weight, for pure aluminum wire has but 48 per cent. of the weight of pure copper wire of equal conductivity, while the price per pound of aluminum is but a little over 50 per cent. greater than copper.

Aluminum is also used as a reducing agent in the preparation of metals from such

refractory materials as oxides of chromium, titanium, tungsten, vanadium, molybdenum, etc. The process consists in intimately mixing finely powdered aluminum with these metallic oxides in a crucible of refractory material, and adding enough barium peroxide to start the reaction. When the mixture ignites the aluminum oxidizes so rapidly that it reduces the oxides of other metals present in the mixture. The advantage of this method consists in its forming a better means of preparing metals for use in steel manufacture than adding them in the form of iron. Aluminum is used to a certain extent as a substitute for magnesium in flash-light powders. It is also employed extensively as a paint, being mixed with varnish for this purpose.

Alloys of aluminum still claim much attention. Among the most recent is an alloy of 75 to 90 per cent. aluminum and 10 to 25 per cent. magnesium, called *magnalium*. This alloy is harder than aluminum, takes a fine polish, does not deteriorate on exposure to air, and can be worked as easily as brass.

The total value of imports, including crude, leaf, plate, sheet, bar, and rod aluminum in 1899 was \$17,253. See BAUXITE.

ALVAREZ, ALBERT RAYMOND, French operatic tenor, sang at the Metropolitan Opera House, New York, during January and February, 1900, having made his début in *Roméo et Juliette* on December 18, 1899. He was born at Bordeaux in the early sixties, began his musical studies when quite young, and, at the age of 18, enlisted in the army to be a musical conductor. After five years he abandoned his military career and went to Paris to study singing, as his voice developed into a beautiful tenor of great power. His teacher, Martini, urged him not to stay too long at the Paris Conservatoire, because of his striking progress. After a short time he made his début at the Royal Opera in Ghent, then sang in the French provinces, and finally in Lyons and Marseilles. On the strength of his great success in the last-named city, he was engaged for the Paris Grand Opéra, where his first appearance, on March 14, 1892, in *Faust*, was an unqualified triumph. He became the leading tenor of the Opéra, and has since then created the chief parts in eleven new operas, most of which owed their vogue largely to Alvarez's personal magnetism. His repertoire of 45 operas embraces the standard works of the present time. Wagner's *Lohengrin*, *Tannhäuser*, *Walter* and *Stegmund* among them, but he sings no German at all, and very little Italian. He has won a great reputation in Spain, Russia, and especially in London, where he sings nearly every summer. He visited the United States in 1898-99 with the Damrosch Opera Company, but confined his appearances to Chicago, Philadelphia, and Boston. In these cities he was hailed as the greatest tenor that had come to the United States in the past two decades, and expectation ran high in New York. Here he was heard in *Roméo et Juliette*, *Faust*, *Carmen*, *Aida* and *Le Prophète*, and, with qualifications, the verdict of Boston was approved by the New York audiences, but not so by the critics. See MUSIC.

AMBULANCE. The Presbyterian, Roosevelt, New York, and St. Vincent Hospitals in New York City began using electrical ambulances in 1900. The Roosevelt Hospital vehicles are each 7 feet 6 inches long (which is about 1½ feet longer than the old ambulance) and weigh 4800 pounds each.

AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE. See POLITICAL AND SOCIAL SCIENCE, AMERICAN ACADEMY OF.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. See AGRICULTURE; ANTHROPOLOGY IN AMERICA; BOTANY; and ZOOLOGICAL SOCIETIES.

AMERICAN ASSOCIATION OF ANATOMISTS. See ANATOMISTS, AMERICAN ASSOCIATION OF.

AMERICAN ECONOMIC ASSOCIATION. See ECONOMIC ASSOCIATION.

AMERICAN FEDERATION OF LABOR. See FEDERATION OF LABOR.

AMERICAN FISHERIES SOCIETY. See FISH AND FISHERIES.

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS. See PHYSICS.

AMERICAN LIBRARY ASSOCIATION. See LIBRARY ASSOCIATION.

AMERICAN MICROSCOPICAL SOCIETY. See ZOOLOGICAL SOCIETIES.

AMERICAN MORPHOLOGICAL SOCIETY. See ZOOLOGICAL SOCIETIES.

AMERICAN MUSEUM OF NATURAL HISTORY, NEW YORK. See ANTHROPOLOGY IN AMERICA and ARCHEOLOGY, AMERICAN.

AMERICAN ORNITHOLOGISTS' UNION. See ORNITHOLOGY.

AMERICAN PSYCHOLOGICAL ASSOCIATION. See PSYCHOLOGICAL ASSOCIATION, AMERICAN.

AMERICAN SOCIETY OF NATURALISTS. See ZOOLOGICAL SOCIETIES and BOTANY.

AMHERST COLLEGE, Amherst, Mass., founded 1821, had in 1899-1900 a faculty of 36 and a student body of 400. Its library, which contains 75,000 volumes, is one of the largest possessed by a purely collegiate institution. The income for the year from all sources was \$104,000. An important change in the college curriculum went into effect at the beginning of the academic year 1900-01, whereby a candidate for the arts course may enter upon only one ancient language instead of upon two, as formerly. The entrance requirements for the B.A. course are now: (1) English, history, and elementary mathematics; (2) elementary and advanced Latin or elementary and advanced Greek; (3) any one of the following four options: elementary and advanced Latin; elementary and advanced Greek; elementary Latin or Greek and one other subject, elementary or advanced; or one modern language, one advanced subject, and one other subject, elementary or advanced.

ANÆSTHESIA. During 1900 many operations upon the lower part of the body have been performed without pain after securing anæsthesia of that region by injecting a solution of cocaine into the spinal canal. This method, improperly attributed to Dr. August Bier, of Kiel, was original with Dr. J. Leonard Corning, of New York, who demonstrated its possibility in 1885. Last year Professor Bier, as well as Professor Tuffier, of Paris, revived the procedure. A long platinum needle is inserted between the second and third lumbar vertebrae and into the spinal canal. Through it is injected the solution of cocaine. In a few minutes sensation below this level is abolished. A patient retaining full consciousness may then witness the amputation of his leg, opening of his abdomen, removal of a tumor, etc. Insensibility of the whole body to pain may be secured, lasting from one to two hours. Vomiting, dizziness, headache, weakness and even collapse may follow. Many successes without accident are reported by American surgeons.

ANAM or **ANNAM**, a French dependency on the China Sea, extends from Tonking and the Chinese province of Yun-nan on the north to Cochin China and the Gulf of Siam on the south. The capital is Hué. In 1884 the country became a French protectorate, the area of which is reported at 88,780 square miles and the population variously estimated at from 2,000,000 to 6,000,000. Probably the latter figure is the more nearly correct. Roman Catholics number 420,000. The population of Hué is about 30,000. The king, Thanh Thai and other Anamite functionaries, under the control of the French government, administer internal affairs. The local budget for 1900 balanced at 1,845,835 piastres. Among the products are rice, maize and other cereals, mulberry, cinnamon, the areca-nut, tobacco, betel, manioc, sugar, medicinal and dye plants, and bamboo. Raw silk, crape, and earthenware are produced. To a limited extent mines of iron, copper, zinc, and gold are worked by the natives. The principal imports are cottons, tea, petroleum, paper goods, and tobacco; the chief exports are sugar and cinnamon. In 1898 the imports and exports were valued at 3,775,000 francs (\$728,575) and 3,075,000 francs (\$593,475) respectively. See **INDO-CHINA**.

ANATOMISTS, ASSOCIATION OF AMERICAN, organized in 1888, in 1899 had 131 active and 10 honorary members. President, George S. Huntington, M.D.; secretary, D. S. Lamb, M.D., 800 Tenth Street, N. W., Washington, D. C. The annual meeting was held in 1900 at Johns Hopkins University, Baltimore, December 27-29.

ANCIENT ACCEPTED SCOTTISH RITE MASONS, the Supreme Council of Sovereign Grand Inspectors-General of the Thirty-third and Last Degree, had, on October 1, 1899, in the Northern Masonic Jurisdiction of the United States a membership aggregating about 100,000 and the Permanent Fund and amount in treasurer's hands exceeded \$200,000. Grand commander, Henry L. Palmer, Milwaukee, Wis.; grand secretary-general, Clinton F. Paige, Binghamton, N. Y. Officers of the Southern Masonic Jurisdiction, James D. Richardson, Murfreesboro, Tenn., lieutenant and acting grand commander; grand secretary-general, Frederick Webber, 433 Third Street, N. W., Washington, D. C. Grand Commander Caswell died November 13, 1900.

ANDERSON, JOHN, M.D., F.R.S., a distinguished zoologist, died in England, August 15, 1900. He was born October 4, 1833, in Edinburgh, where he studied medicine at the University, receiving a gold medal and the degree of Doctor of Medicine in 1861. After a short term as professor of natural science at the Free Church College, Edinburgh, he went to Calcutta in 1864, and became curator of the new government museum and professor of comparative anatomy in the medical college. Important collections were acquired for this museum, often under great difficulties, and Dr. Anderson published an account of some of these trips in *Mandalay to Momein* in 1876. In 1879 he published two large volumes of anatomical and zoological researches. He was the first to obtain a specimen of the porpoise inhabiting the Irrawaddy River, and studied carefully the allied species in the Bay of

Bengal and adjoining waters. In 1881-82 he visited Tenasserim and the Mergui Archipelago and collected specimens of marine animals, which were subsequently described in the journal of the Linnæan Society, and also wrote a book entitled *English Intercourse with Siam*, which, intended as a part of the original report, was published as a separate volume in 1889. Dr. Anderson retired from the Indian service in 1886, and after a few years spent in travel he settled in London. He passed several winters in Egypt, and prosecuted vigorously the study of its mammals and fauna. The first part of his researches, dealing with the reptilia and batrachia of this country, appeared in 1898. He also investigated the fauna of neighboring countries, and in 1898 published *A Contribution to the Herpetology of Arabia*. Dr. Anderson was elected a fellow of the Royal Society in 1879, and was a frequent contributor to the English zoological journals.

ANDRÉ, General, succeeded General de Gallifet on May 30, 1900, as minister of war in the Waldeck-Rousseau cabinet. He was born at Nuits, in the Côte d'Or, in 1838, and studied at the *Ecole Polytechnique*. He distinguished himself in the Franco-Prussian War, and was put at the head of the Tenth Infantry Division in May, 1899. His first official act showed him neutral in the matter of the French army against Dreyfus. He prosecuted the newspaper *L'Aurore* for a published attack on the general staff, but opposed at the same time an attempt to renew the affair. Later in the year he began a thorough reorganization of the general staff, and rendered himself extremely unpopular by his arbitrary interference with the established code of military honor and regimental *etiquette*.

ANDREW AND PHILIP, BROTHERHOOD OF, organized 1888, is an inter-denominational organization, whose object is to bring men under the influence of Christianity. It has 15,000 members distributed among 550 chapters. Official organ, the *Brotherhood Star*. President, Dr. Rufus W. Miller; secretary, Rev. C. E. Wyckoff, Irvington, N. J.

ANGLICAN CHURCH, also known as the Anglo-Catholic Church, a general term comprising Protestant Episcopal churches of all countries which are affiliated with the established church of England. See ENGLAND, CHURCH OF; IRELAND, CHURCH OF; SCOTLAND, CHURCH OF; and PROTESTANT EPISCOPAL CHURCH.

ANGLIN, Miss MARGARET, a young American actress, was born in Ottawa, Canada, in 1876. She was educated at a French convent school, and received dramatic instruction in New York. In 1894 her début was made in *Shenandoah*. Between 1895 and the present she has appeared in *Hamlet*, *Virginus*, *Monte Cristo*, *As You Like It*, *Brother Officers*, and *The Bugle-Call*. During 1900 she received much appreciation for her performance as Mrs. Dane in Mr. Henry Arthur Jones's new play, *Mrs. Dane's Defence*. See DRAMA.

ANGOLA, or PORTUGUESE WEST AFRICA, a dependency of Portugal, is bounded on the north by the Congo Free State (a small portion of Portuguese territory touching French Congo), on the east by the Free State and British Central Africa, on the south by German Southwest Africa, and on the west by the Atlantic, the coast line extending over 1000 miles. The area and the number of inhabitants are uncertain, but the one has been estimated at 484,800 square miles and the other at 4,119,000. The seat of government is St. Paul de Loanda, a seaport with about 14,000 inhabitants and on the telegraphic cable connecting Europe and Cape Town. Other important towns are Benguella, Mossamedes, Cabinda, Ambriz, Port Alexander, and Novo Redondo. The colony is administered by commissioners appointed by the home government, and for the preservation of order and the protection of Portuguese rights there is a military force of some 4000 men, of whom over 2800 are natives.

The estimated revenue and expenditure in milreis for the fiscal year 1899 were 1,651,797 and 1,846,469 respectively; for the fiscal year 1900, 1,673,111 and 2,013,671 respectively; the milreis is worth \$1.08. The principal products include coffee, rubber, vegetable oils, wax, ivory, cattle, fish, coco-nuts, and sugar, the last being used for rum distillation. There occur deposits of copper, malachite, iron, salt, and petroleum, and a few years ago the Cassinga gold mines were discovered, the right of exploitation in which was included in the concession granted to the Mossamedes company, which engages also in cattle raising and fish curing. Commerce is carried on chiefly with Portugal, the principal import being textile goods, and the leading exports coffee and rubber. In 1897 the imports and exports, including the coasting trade, were valued at 6,380,368 milreis and 6,577,791 milreis respectively. The foreign merchant shipping entered at the ports in 1897 amounted to 1,053,248 tons carried in 615 vessels, while the entrances in the coasting trade numbered 2547 vessels of 70,743 tons. In September, 1899, the railroad extending inland from St. Paul de Loanda was open for traffic as far as the Lucalla River, a distance of 225 miles, and it was intended in the interest of export transportation to continue the line 78 miles

to Melandsche. Another railway, about 20 miles in length, connects Benguella with Katumbella. In 1898 there were 18 telegraph offices and 807 miles of line.

ANTARCTIC EXPLORATION. In 1900 there was renewed interest in Antarctic exploration. This was doubtless due in part to the two interesting and important expeditions that had been recently made to the south polar regions—namely, the Belgian expedition under Captain Adrien de Gerlache, which returned in the spring of 1899, and the British expedition under Mr. Borchgrevink, which returned a year later after making a new record for south latitude. During 1900 three expeditions—British, Swedish, and German—were definitely projected for the coming year, while it was proposed that a Scotch expedition under the charge of Mr. William S. Bruce, the well known naturalist and polar explorer, sail also in the summer of 1901. Further accounts of the returned British expedition and of the three projected expeditions are given in the succeeding paragraphs.

The Borchgrevink Expedition.—The British expedition, organized by Sir George Newnes and commanded by Mr. Carsten Egebert Borchgrevink, which sailed in the oak steamer *Southern Cross* from Hobart, Tasmania, December 10, 1898, arrived, on its return, at Stewart Island, New Zealand, April 4, 1900, after reaching the highest southern latitude ever attained, $78^{\circ} 50'$. On December 30, 1898, the first ice was encountered in latitude $61^{\circ} 56' S.$ and longitude $153^{\circ} 53' E.$ Balleny Island was sighted January 14, 1899, but, being held in the ice-pack for about a month, the *Southern Cross* did not put into Robertson Bay, at Cape Adare, Victoria Land, until February 17. A landing was effected, though with difficulty, and a house constructed. On March 2 the ship sailed away for New Zealand, leaving Mr. Borchgrevink and nine others to a year's work in Antarctic exploration and scientific investigation. Unfortunately, the very mountainous character of the country made long sledge journeys impossible. On March 12 Mr. Borchgrevink and Mr. Louis Bernacchi ascended Cape Adare to the height of 3670 feet. On April 22 an attempt to penetrate Robertson Bay on the ice almost ended in disaster on account of the terrific storms, the wind attaining a rate of 87 miles an hour. During July, August, and September (1899) a number of small sledge journeys were accomplished, an island—named Duke of York—being discovered, a valuable geological collection made, and the coast of Victoria Land investigated. The interior could not be explored, as the land, even in the vicinity of Robertson Bay, reached an altitude of 12,000 feet. These mountains are covered with enormous glaciers which break off into the sea sometimes at an angle of 50 degrees. Such a "birth of an iceberg" on one occasion resulted almost fatally for Mr. Borchgrevink and a companion, who, standing on a ledge of rock near the sea level, were overwhelmed by the immense wave succeeding the plunging of the glacier block into the sea. A few specimens of fauna and flora were collected, a meteorological record was kept for one year, and magnetic observations were made that led to a calculation of the position of the south magnetic pole. In the latter part of October great numbers of penguins flocked to Cape Adare; their eggs and a small number of fish constituted the only food found by the party in the Antarctic region. The lowest temperature was recorded in August $52^{\circ} F.$ below zero, and by January, 1900, the weather was considerably warmer, the ice-pack having entirely disappeared by the tenth of the month. On February 28 the *Southern Cross* returned, and two days later Mr. Borchgrevink's party began the voyage home. The return, however, was not direct, as the ship pushed to the east and south, and several landings were made. It was on one of these occasions that Mr. Borchgrevink's escape from the glacier-wave occurred. The last landing was effected at Ross Bay on March 17, 1900, when Mr. Borchgrevink and two others proceeded southward, reaching the "furthest south" point— $78^{\circ} 50' S.$ and $195^{\circ} 50' E.$ The *Southern Cross* arrived at Stewart Island on April 4. The party reported that winter in the south polar regions is much harsher than in the north polar, while the extremely rough and mountainous character of the glacial ice, as compared, for instance, with that of Greenland, renders exploration very difficult. The south magnetic pole was not reached, though its position was calculated.

The National Antarctic Expedition.—This will be a British expedition, and will probably sail in August, 1901. The vessel to be used, the *Discovery*, designed by Mr. W. E. Smith, was in process of construction at Dundee during the summer and fall of 1900. The expedition will be under the command of Lieutenant R. F. Scott, R.N., and Professor John W. Gregory, of the University of Melbourne, will be chief of the scientific staff. The explorations will probably be in Victoria Land, to the south of New Zealand. The *Discovery* is a barque-rigged vessel, with three decks and timbers of oak. Its length between perpendiculars is 172 feet, beam 34 feet, depth 19 feet. For a considerable radius amidships brass rather than iron is used for the metal work, in order that more accurate magnetic observations may be made. The engines will have an indicated horse-power of 450.

The Swedish Expedition.—In the latter part of 1900 the first Swedish Antarctic expedition was in preparation under Dr. Otto Nordenskjöld, who has taken part in several Arctic expeditions, and in 1898-99 was a member of the Danish expedition to East Greenland commanded by Lieutenant Amdrup. The expedition will cost about \$50,000, which has been largely subscribed, and Dr. Nordenskjöld hopes to sail in August, 1901, in the *Antarctic* from Gothenburg, where at the end of the year the vessel was being equipped. The Swedish explorations will probably be in the region south of America, and if possible the party will co-operate with the British and German expeditions. Though the *Antarctic*—a steam whaler built in Norway—has seen much service in Arctic and has already made at least one voyage in Antarctic seas, it is still in excellent condition; it is especially adapted for navigation in the pack-ice. It was used for some time by the geologist and Arctic explorer, Professor A. G. Nathorst, and, under the command of Lieutenant Amdrup, returned to Copenhagen on October 4, 1900, from its last Arctic voyage.

The German Expedition.—During 1900 preparations were made for a German Antarctic expedition, which is expected to sail in the summer of 1901, under the command of Herr Erich von Drygalski. The ship for this expedition was being built at Kiel in the fall of 1900. It was designed to be a three-masted schooner, protected with a triple sheathing of oak, pitch pine, and green heart, and equipped with triple expansion engines capable of giving a seven-knot speed. The ship will carry a balloon apparatus, a twenty-foot naphtha launch, and a windmill for working the dynamo when the steam is down. The attention of the German expedition will be directed to the region south of the Indian Ocean.

ANTHROPOLOGY IN AMERICA. The growing interest in anthropology has been manifested during the past year by increased activity among the larger museum establishments of the country and by the inauguration of systematic anthropologic and archaeologic work in several institutions not hitherto prominently represented. Notable events are the Congrès des Américanistes at Paris during the Exposition, the movement for an archaeologic survey of Michigan, the organization of the Colorado Women's Cliff-Dwelling Association, and the favorable report upon the bill providing for the Cliff-Dwellings National Park in New Mexico, to include the Santa Clara ruins. In this connection may be noted also the reorganization of the American Ethnological Society in New York, consummated in the closing month of 1899. The summer meeting of the American Association for the Advancement of Science was held in Columbia University, New York, June 25-29. A large number of papers was presented before the anthropological section (H), among which was one of special interest by Professor Stansbury Hagar on *The Peruvian Star Chart of Sulcamayhua*, this being an ancient Peruvian manuscript containing the key to the symbolic astronomy of the Incas. The title of the committee for the study of the white race was changed to the "Anthropometric Committee," and the committee upon anthropologic teaching was made permanent. Dr. J. Walter Fewkes, of the Bureau of American Ethnology, and Dr. G. G. MacCurdy, instructor in anthropology at Yale University, were elected respectively vice-president and secretary of the section for the ensuing year. The session closed with an inspection of the splendid collections of the American Museum. The Paris Exposition was made memorable by the assembling, under the auspices of the French government, of a number of scientific congresses, one of the most important being the Congrès International des Américanistes, September 17-22. Dr. E. T. Hamy, of the Musée d'Ethnographie, presided, and the list of those present included such distinguished names as Bonaparte, Loubat, Charencey, Pinard, and Nadaillac. Congresses were also held in psychology, prehistoric anthropology and archaeology, ethnographic sciences and folklore. Evidence of the growing European interest in American anthropology is afforded by the recent establishment of a chair of American archaeology at the University of Berlin, through the liberality of the Duc de Loubat, with Doctor Adolf Bastian as incumbent. The annual joint meeting of the American Association, the American Folklore Society and affiliated bodies was held at Baltimore, December 27-28, Dr. Frank Russell, of Harvard University, presiding over section H of the association, while Dr. Franz Boas, of the American Museum of Natural History, officiated as president of the Folklore Society. Among notable papers in section H may be mentioned a study of Pueblo albinism by Dr. Aleš Hrdlička, a paper on ancient village sites in Ohio by Professor W. C. Mills and one upon primitive burial in British Columbia by Dr. Harlan I. Smith. The subject of the evening lecture, by Dr. Frank Russell, was *The Indians of the Southwest*. The presidential address of Dr. Boas before the Folklore Society discussed *The Mind of Primitive Man*, and was an argument for the essential unity of the primitive mind throughout the world. A paper which has led to much discussion was that by Dr. Fewkes on *Interpretation of Pueblo Katsinas*. A pleasant feature was the rendering of a number of negro folksongs by Miss Mary W. Speers. Dr. Thomas Wilson reported upon the con-

gresses at the Paris Exposition, and steps were taken for receiving the Société des Américanistes in this country in 1903. Dr. Frank Russell and Mr. W. W. Newell were elected respectively president and secretary for the ensuing year.

The Pan-American Exposition, to be held at Buffalo during the coming summer, has made provision for a Department of Ethnology and Archæology, under the direction of Dr. A. L. Benedict, with the co-operation of various museum establishments of the country. The ethnologic exhibits are to be housed in a special pavilion, and there is also to be an open-air exhibit of the Six Nation Indians of New York State.

Within the year science has had to chronicle the loss of Dr. Charles E. West, ex-president of the American Ethnological Society, who died at his home in Brooklyn, March 9, at the ripe age of 91; James G. Swan, known for his early researches among the tribes of the lower Columbia; and Frank Hamilton Cushing, of the Bureau of American Ethnology, who died at his home in Washington on April 10 at the early age of 43.

Smithsonian Institution and National Museum, Washington.—The Smithsonian Institution is the centre and controlling force of nearly all the scientific work carried on under government auspices, as well as the chief official medium between American scholars and those of other countries. The results of investigations prosecuted by its direction or with its assistance appear in its published reports and monographs, while the collections brought back by the various government expeditions or obtained by gift or purchase are deposited in the National Museum in charge of officers of the Smithsonian Institution. The museum has also its own special publications. Under a system begun with the new year only completed volumes are now entered in the library accession book, separate note being taken of ordinary periodical and fugitive publications. Upon this basis the Smithsonian library accessions for the last fiscal year aggregate 25,701 volumes, pamphlets, and charts. The work of the Smithsonian Bureau of International Exchanges, through which all government and scientific publications are transmitted free of charge between this country and the governments, learned societies, and scholars of other lands, has grown to be of immense value and importance. During the last year the number of packages thus handled aggregated nearly 114,000, weighing in the aggregate about 410,000 pounds. The number of correspondents taking advantage of these facilities aggregates about 34,000. Among the most recent Smithsonian publications more directly dealing with anthropology, exclusive of those issued from the Bureau of American Ethnology, are the *Bulletin and Annual Report of the National Museum*, and descriptions of the Latimer collection of antiquities from Porto Rico and of the Guesde collection from Guadeloupe. An important work, issued by special authority of Congress, and now nearly ready for distribution, is *A Documentary and Legislative History of the Institution* from its inception.

The National Museum is organized in three departments, anthropology, biology, and geology, each in charge of a curator, Professor W. H. Holmes having charge of anthropology. The Department of American Archæology occupies separate quarters in the Smithsonian building proper, in charge of Dr. Thomas Wilson, curator. The proper display of the immense and valuable collections is now much hampered by lack of space. Some idea of the urgent necessity for more adequate accommodations may be obtained from the statement that the number of specimens added during the last year alone aggregates 206,617, comprised in 1467 different accession lots, making the total number of museum specimens now but little short of 5,000,000. It is earnestly to be hoped that Congress may soon make suitable provision for the emergency. Among the notable American accessions during the year may be mentioned an extensive archæologic collection presented by Mr. Joseph D. McGuire, of Washington. Under direction of Dr. F. W. True, government representative for the institution, extensive preparations are in progress for representation at the coming Pan-American Exposition at Buffalo. Among the proposed exhibits is an extensive Philippine collection, obtained during the year by Colonel F. F. Hilder, on special detail for the purpose from the Bureau of American Ethnology.

The Bureau of American Ethnology, Washington.—This department of the Smithsonian Institution, under the directorship of Major J. W. Powell, deals exclusively with American anthropology, the work consisting of field investigation, library research and publication. About the beginning of the year the director, accompanied by Professor W. H. Holmes, of the National Museum, made a reconnaissance visit to Cuba and Jamaica, obtaining important data for a future study of the problem of Caribbean influence upon the aborigines of the South Atlantic coasts. Dr. J. Walter Fewkes continued archæologic researches in the southwest with good result. A portion of the time was spent in observation of the winter ceremonials at the Hopi pueblos, and later in the season excavations were carried on among the ruins of northwestern Arizona. Toward the end of spring Miss Alice C. Fletcher, well known for her studies among the Omaha, was commissioned as a special agent to the

Pawnee tribe in Oklahoma, and was notably successful in obtaining an important esoteric ritual, which will appear in full, with songs and musical accompaniment, in the twentieth report of the bureau. The work of Colonel F. F. Hilder, on detail to the Philippines during the early part of the year, has been already noted. Later in the year Mr. J. N. B. Hewitt, the Iroquoian specialist, again visited the tribes of that stock in New York and Canada for the purpose of adding to his already large stock of mythologic material, and was still in the field at the close of the year. Mr. James Mooney, who has devoted some years to the study of the Cherokee, spent several months upon the East Cherokee reservation in North Carolina, collecting additional material for a series of monographs relating to the tribe. The first of the series is now almost ready for distribution as Part I. of the Nineteenth Annual Report of the bureau. A most noteworthy exploration was that conducted by Professor W. J. McGee, ethnologist in charge, during the last three months of the year in the little known region about the mouth of the Colorado River, Sonora, Mexico. The primary purpose of the expedition was to obtain definite information as to the Tepoka Indians, who had been reported as still wandering in that vicinity when Professor McGee made his exploration of Tiburon Island five years before. Outfitting at Phoenix, Ariz., the party crossed over the arid desert to the point upon the gulf coast where the Tepoka had been reported as still ranging in 1895. It was found, however, that the tribe was either extinct or that the small remnant had joined the Seri farther south, the first supposition being the more probable. Numerous shell heaps and other traces of former occupation attested the truth of the local tradition. Turning northward, the party then visited the Cocopa, an agricultural people residing on both sides of the Colorado River just above its mouth. Linguistic results indicate that the tribe, now rapidly declining, is of Piman affinity. A typical collection, including photographs by Mr. DeLancey Gill, illustrator of the bureau, accompanying the expedition, was made, which will form part of the exhibit at the Pan-American Exposition. Some attention was also given on the return trip to the petroglyphs of the Gila and Salado valleys. Each bureau member is also charged with his special office investigation, usually collated from results of previous field research. In intervals of administrative duties the director was engaged upon a synthesis of native languages, based upon material in the bureau archives. Dr. Cyrus Thomas continued his study of Mexican calendars. Mr. F. W. Hodge found time from active editorial and library duties for work upon a comprehensive Pueblo cyclopædia and synonymy. Mrs. Matilda C. Stevenson brought to completion her monograph on Zuni mythology. Dr. John R. Swanton, the most recent addition to the staff, is at present engaged in ethnologic investigations in British Columbia. Dr. A. S. Gatschet devoted the year to revising for publication the Trumbull dictionary of the Massachusetts language, based upon the celebrated Eliot Bible. It will appear as the first of a new series of bulletins. Of the regular series of annual reports of the bureau the Nineteenth is now in press.

Peabody Museum, Cambridge.—Under direction of Professor F. W. Putnam, curator, and Dr. Frank Russell, assistant curator, this institution keeps well in the front rank, having added 3600 numbers to its catalogue of accessions during the past year, a large portion being the result of explorations carried on under direct supervision of the museum. Among important American accessions are those from Alaska, obtained by the Harriman expedition and presented by Mr. E. H. Harriman. The Brown University expedition to Labrador donated valuable Eskimo collections. Mr. F. F. Burr contributed a valuable series from shell heaps along the Massachusetts coast. With the income from the Warren fund Dr. Russell conducted an expedition to Arizona, in the course of which a large number of ruins were examined and some two hundred photographs secured, besides skeletons and several hundred ethnologic specimens, with much valuable information bearing upon the general subject. The income from the Huntington-Frothingham-Walcott fund was devoted to the purchase of gold figurines and ornaments from the ancient graves in Colombia, thus supplementing a previous collection of Colombian pottery procured by the aid of the same fund. In Central America work has been successfully continued through the generous aid of Mr. Charles P. Bowditch, Mr. Stephen Salisbury, and others. From Mr. Maler have been received numerous photographs and moulds of sculptures from the Maya ruins, with a collection from the wild Lacandons of Lake Petén. Besides moulds and casts from Yucatan, Mr. Thompson has forwarded a copy of a mural painting from a ruin at Chichen-Itza. Mr. G. B. Gordon, in charge at Copan, has succeeded in making an arrangement with the government of Honduras by which Harvard University secures control of those ruins for a period of ten years, with permission to excavate and to remove to the Peabody Museum a portion of the finds. A most important result of his work has been the completion of the investigation of the great hieroglyphic stairway. The museum now has moulds of the faces of every step of this grand approach, together with casts of portions of human figures which once stood along the stairway. A splendid model of

these extensive ruins, made to scale by Mr. C. C. Willoughby, now occupies a case in the Central American Hall. The Serpent Mound Park in Ohio has been transferred by the corporation of Harvard University to the State Archaeological and Historical Society of Ohio. Among important additions to the library is a fac-simile copy of the *Codex Rios*, presented by the Duc de Loubat.

American Museum of Natural History, New York.—The anthropologic section of this great institution is under direction of Professor F. W. Putnam as chief curator, with Dr. Franz Boas, curator of ethnology, Mr. Marshall H. Saville, curator of Mexican and Central American archaeology, Dr. Harlan I. Smith, assistant curator of archaeology, and a staff of well-known ethnologic collaborators. The rapid growth of the museum and the activity of its workers are shown by the fact that the anthropologic department, which three years ago occupied a single hall, now fills five, while two more are being arranged for opening in the near future. A new wing has been added during the year and plans are being considered for another.

Within the United States archaeologic explorations have been conducted by Professor Putnam at the Pueblo Bonito ruins and in California; by Mr. Raymond Harrington among the shell heaps and ancient graves along the west end of Long Island Sound; and by Mr. Ernest Volk among the Trenton gravels.

The work of the Jesup North Pacific expedition, under the liberal patronage of the president of the institution, Mr. Morris K. Jesup, is being vigorously prosecuted on the Asiatic side. Early in the year Messrs. Waldemar Jochelson and Waldemar Bogoras, Russian scientists of distinguished reputation, started for Siberia to study the tribes of the unknown region northeast of the Amur River. They expect to be gone two years. Important work for the Jesup expedition was also continued by Dr. Boas about Vancouver Island and the adjacent region, by Dr. Livingston Farrand among the coast tribes of Washington and Oregon, and by Mr. James Teit in British Columbia. Mr. Roland B. Dixon continued investigations among the Maidu and other California tribes, and Dr. Alfred L. Kroeber investigated Arapaho symbolism in Oklahoma. A part of this work was made possible by the generosity of the late Henry Villard and C. P. Huntington. Dr. George Pepper and Dr. Harlan I. Smith were occupied during the year in classifying material already collected, respectively, among the Pueblo ruins and in British Columbia. The splendid explorations prosecuted for several years by Mr. Marshall H. Saville among the remains of the ancient civilizations of Mexico and Central America, through the munificence of the Duc de Loubat, still goes on. Mr. Saville returned from Mitla early in the spring, and after arranging his collections started again for the field in November to be gone for six months, by the end of which time it is expected that the work will be practically completed. In this connection may be noted the valuable Stahl collection from Porto Rico, recently acquired. The researches begun in 1892 in Peru and Bolivia by Dr. Adolf Bandelier, under the patronage of the late Henry Villard, have been continued since 1894 under museum auspices. Dr. Bandelier is now on his way from Peru for the purpose of preparing his results for publication. The South American department has also been enriched within the year by a collection of Ecuadorian antiquities donated by the Duc de Loubat, and the splendid Gaffron collection from Peru, embracing feather work, textiles, gold, silver, copper and wood carvings, and pottery. The publications during the year include a fine series of large 8vo memoirs, by Teit, Farrand, and Smith, embracing the results of their researches for the Jesup expedition, and another of special value by Dr. Carl Lumholtz upon the symbolism of the Huichol Indians of Mexico; bulletins by Saville and Kroeber embodying Mexican and Arapaho results; a museum journal, issued at frequent intervals; and convenient little guide books to the various halls. These publications are all models for their kind in matter and general make-up. The museum library now numbers over 40,000 volumes.

University of Pennsylvania, Philadelphia.—The museum department of archaeology and paleontology, under the efficient curatorship of Professor Stewart Culin, has made notable growth during the year. It is impossible here to do more than mention the splendid accessions from Babylonia, Egypt, and Etruria, the results of explorations carried on by Professor Hilprecht and others under the auspices of the Babylonian Exploration Committee, the American Exploration Society and private patrons. The important collections from Assam, Tibet, and the far east must also be passed over with a word. The American section has been enriched by a valuable archaeologic collection from the ancient country of the Natchez in Mississippi. The collection obtained by Dr. Uhle from excavations at Pachacamac, Peru, in 1896-97 has also been arranged in the American hall. The most important accession is a series of objects, numbering about 2000 specimens, collected by the curator, Professor Culin, during an expedition undertaken in the early part of the year, of which the Hon. John Wanamaker generously bore the expense. Most of the trip was made in company with Dr. Dorsey, curator of the Field Columbian Museum of Chicago, and occupied about three months, sixteen tribes on twelve

reservations from Iowa to the Pacific coast being visited, including the Muskewiki, Shoshoni, northern Arapaho, Banak, Ute, Piute, Hupa, Wichapek, Makaw, Yakima, Umatilla, Grosventre and Sioux. The prehistoric jasper quarry near Whalen Cañon, Wyoming, was also examined and a representative series of stone implements obtained. A noteworthy Kwakiutl collection was secured by Mr. Culin at Victoria, B. C., comprising over 150 objects, including two large carved figures in wood. From a museum standpoint the expedition was one of the most successful ever undertaken in the West. The regular weekly course of free public lectures upon anthropologic subjects was maintained during the months of April and May, the addresses being by distinguished experts, including the curator himself. Steps are being taken to establish a "Brinton Chair of American Archaeology and Ethnology," in memory of the late distinguished scholar who did so much for the science, and whose library, including one of the largest manuscript linguistic collections in existence, is now in possession of the university.

Carnegie Museum, Pittsburg.—Under direction of Dr. W. J. Holland, director, this institution has prosecuted local archæologic work by a study of the petroglyphs at Smith's Ferry on the Ohio, the largest and best preserved group known to exist in western Pennsylvania. Casts of the more important have been made and are now being placed on exhibition at the museum. Group figures of the celebrated Hopi snake dance are also being prepared by the well-known expert in that line, Mr. Theodore Mills. Mr. Andrew Carnegie has presented a series of reproductions of sculptured stones in the National Museum of Mexico, the series being in part a duplicate of the replicas presented to the American museum by the Duc de Loubat. A large deposit collection of baskets and blankets from the southwestern tribes has been obtained from Mr. and Mrs. R. C. Hall, and a number of minor contributions from various sources have also been added. A notable collection from recent excavations at Abydos, Egypt, has been donated by the Pittsburg branch of the Egypt Exploration Society.

Ohio State Archæological and Historical Society, Columbus.—The headquarters of this institution are located in the State capitol, while the museum and library, in charge of Dr. W. C. Mills, curator, are housed in the State University. The principal work of the year has been a continuation of the explorations at the Baum village site, on Paint Creek, in Ross County, O. Like all other archæologic work under the direction of Dr. Mills, the excavations and examinations are being carried on in the most careful and systematic manner, with rich results which will have important bearing upon many problems connected with American antiquities. As stated elsewhere, the custody and ownership of the Serpent Mound Park have recently been transferred from the corporation of Harvard University to the State society. It is the intention to make a thorough archæologic survey of the entire State, and the next work will be done upon the Ross County mounds, under personal supervision of the curator.

Field Columbian Museum, Chicago.—Under direction of Dr. George A. Dorsey, curator, with Mr. C. S. Simms, assistant, the anthropologic section of this museum has made steady and rapid growth during the past year. An entire rearrangement of the installations is in progress to accommodate enlarged demands, and a fine series of ethnic groups is in preparation. The most important recent purchase is the Perrine collection of over 1500 pieces from mounds, village, and quarry sites in Union County, Ill. It includes some of the finest chipped and polished stone implements ever collected, the most valuable object being a stone statue of human form. Another large archæologic collection of over 1000 pieces was acquired by purchase from Mr. W. C. Wyman, and important new material was procured from southern Illinois by a museum expedition in charge of Dr. Phillips.

Early in the year Assistant Curator C. S. Simms visited the Iroquois upon the Grand River Reservation in Ontario, and was fortunate in witnessing the complete ceremony of the White Dog sacrifice and obtaining a valuable collection of the paraphernalia, including a unique series of masks used in the dance. By the further generosity of Mr. Stanley McCormick, the museum was enabled to continue researches in the Hopi country of Arizona. The curator, accompanied by Rev. H. R. Voth, missionary to the tribe, was in the field at the beginning of the year, visiting six of the seven Hopi pueblos, and securing notable additions to the splendid collection previously made by Mr. Voth, which occupies a special hall in the museum. Mr. Voth has now completed the installation of his exhibit in the Hopi halls, of which a prominent feature is a series of nine ceremonial altars prepared by himself. Important additions have also been made by C. L. Owen from his latest expedition. Extensive excavations and archæologic collections were also made by Messrs. Burt and Owen among the ancient ruins of the Hopi country and the adjacent northern and western region, thus supplementing the exhibit illustrating the modern life of the pueblos. By this exploration, much of which was carried on in territory pre-

viously unvisited by scientists, the already large Hopi archæologic collections in the museum have been doubled in amount.

In May the curator, in company with Professor Culin, of the University of Pennsylvania, left Chicago for a reconnaissance visit to the Western reservations. The expedition extended over nearly three months and was especially rich in museum results. That portion covered by the two curators jointly has been already noted in a preceding paragraph. (See paragraph University of Pennsylvania.) In addition, Dr. Dorsey visited the Pomo and Klamath Lake tribes of northern California, the Nez Percés and Dalles tribes of the upper Columbia, and the Grosventres and Assiniboin of the northern plains, making valuable collections at each stopping point. He returned in time to sail for Europe as delegate to the international anthropologic congresses at the Paris Exposition. An invaluable collection of over 1000 pieces from the prehistoric graves of Caldera, Chile, was acquired by gift from Mr. Cyrus H. McCormick. It includes gold and copper ornaments, bone carvings, and a large number of the most beautiful spear and arrow points of jasper and chalcedony that are to be found in the department. The collection is of special value as coming from a region hitherto unrepresented. The usual free lecture course during March and April included four upon anthropologic subjects.

University of Chicago, Chicago.—For several years Professor Frederick Starr, of this institution, has been conducting anthropometric studies among the tribes of Mexico. His most recent trip, from which he returned in May, was undertaken by the assistance of Mrs. Frank G. Logan, of Chicago, and resulted in a large number of measurements, photographs and casts from five tribes—viz., Chinanteco, Chocho, Mazateco, Tepehua and Totonaco. Some general ethnologic studies and collections were also made. A complete report of the work will probably be published within two years.

Colorado.—Wearying of congressional delay, the public-spirited women of Colorado last summer took practical action for the preservation of the interesting ruins in the southern part of the State by organizing the Colorado Women's Cliff-Dwelling Association, with Mrs. Gilbert McClurg as regent and Mrs. W. S. Peabody, vice-regent, and a board of trustees representing the principal cities of the State. By arrangement with the Department of the Interior they have leased from the Ute Indians a tract including the celebrated Mesa Verde ruins, and propose to put it into proper condition for park purposes as a permanent archæologic preserve.

Considerable archæologic exploration, partly in collaboration with the State Historical and Natural History Society, Denver, has also been carried on by private enterprise.

California.—In July the California Academy of Sciences, San Francisco, which has an anthropological collection of considerable importance, organized a department of anthropology, with Dr. Alfred L. Kroeber as curator, under whose direction field work was carried on within the State during the latter part of the year. Through the liberality of Mrs. Phœbe Hearst the University of California is about to undertake anthropologic and archæologic work upon an extensive scale. The work in California and Mexico is to be in charge of Dr. P. M. Jones, while Dr. Uhle will operate in Yucatan and South America.

Canada.—Among recent American acquisitions to the Archæological Museum of Toronto, under the curatorship of Professor David Boyle, are a collection from British Columbia, including some of the well known carved house posts, and a fine collection of nearly three hundred specimens from the isthmus of Tehuantepec. In addition to other duties the energetic curator during the early spring delivered a series of lectures upon anthropologic subjects to visiting classes from the Toronto normal and other schools. The archæological report for 1899, issued by the museum during the past year as a part of the report of the minister of education, contains a fine variety of valuable papers, chiefly relating to the archæology and ethnology of the province of Ontario.

Mexico.—An encouraging omen from Mexico is the recent establishment of a section of anthropology and ethnography in the Museo Nacional, Mexico, in charge of Dr. Nicolas Leon, so widely known for his Tarascan studies. Dr. Leon is now outlining plans for a bibliography of Mexican anthropology and an Indian linguistic map of Mexico. In the Instituto Medico Nacional good work in ethno-botany and ethno-medicine is being conducted by Dr. José Ramirez and Dr. Manuel Urbina.

ANTIGUA, a West India island belonging to Great Britain, constitutes, with its dependencies, Barbuda and Redonda, a presidency of the Leeward Islands colony. The area of Antigua is 108 square miles and of the dependencies 62 square miles, and the population of the three is about 37,000. The city of St. John, which has nearly 10,000 inhabitants, is the seat of government of both the presidency and the colony. The presidency is administered by the governor of the colony and a council of eight official and eight non-official members, all of whom are nominated by the

governor, and it is represented in the federal legislative council by four delegates. About two-sevenths of the area of Antigua is under cultivation, the principal crop being cane sugar, of which the export in 1897 amounted to £101,106; other exports are pineapples, molasses, rum, tamarinds, and arrowroot. Statistics of finance and commerce of the presidency are as follows:

	Revenue.	Expenditure.	Public Debt.	Imports.	Exports.
1898.....	£39,663	£55,586	£137,471	£43,829	£79,178
1899.....	42,821	51,479	137,471	109,036	128,095

In 1898 the aggregate entrances and clearances in foreign shipping amounted to 429,168 tons. Antigua has direct steam communication with Great Britain, New York, and Canada, and is connected with the cable of the West India and Panama Telegraph Company. See LEEWARD ISLANDS.

ANTI-IMPERIALIST LEAGUE, NEW ENGLAND, was organized in Boston November 19, 1898, and took its rise from a meeting held in Faneuil Hall, June 15, 1898, of which Gamaliel Bradford was chairman and Erving Winslow secretary. It was organized as the Anti-Imperialist League, with headquarters at Washington and Boston. On November 25, 1899, its name was changed to the New England Anti-Imperialist League, the title "American Anti-Imperialist League" having been assumed by the organization in Chicago. The New England Anti-Imperialist League, as the parent body, has still retained its connections throughout the United States, and has affiliated with various leagues formed in the principal cities of the country. Its objects are "to aid in holding the United States true to the principles of the Declaration of Independence. It seeks the preservation of the rights of the people as guaranteed to them by the Constitution. Its members hold self-government to be fundamental and good government but incidental. It is its purpose to oppose by all proper means the extension of the sovereignty of the United States over subject peoples. It will withhold its support from any candidate or party that stands for the forcible subjugation of any people." The enrolled membership of the various anti-imperialist leagues is about 500,000. The president of the New England Anti-Imperialist League is George S. Boutwell; secretary, Erving Winslow, 44 Kilby Street, Boston.

ANTIMONY. The metallic antimony produced in the United States is obtained in part from the mineral stibnite and in part from antimonial or hard lead. The amount of metal obtained from these two kinds of ore in 1899 was 234 short tons, valued at \$43,600. The total quantity from both imported and exported ores was 1275 short tons, valued at \$251,875.

From this it is seen that the amount of antimony obtained from domestic ores was less than 10 per cent. of the total consumption. The United States product came chiefly from California and Idaho, although smaller amounts were produced by Arkansas and Nevada, and antimony ore in quantity has been reported from Washington. The deposits known to exist in Nevada and Utah were but little worked during the year just passed. The production of antimony during 1900 was mostly from foreign ores, and the metal was produced almost entirely by the Mathison smelting works, of New York.

The price during 1900 varied from 10 to 11 cents per pound for the best brands, and there has been a marked increase in the imports both of antimony ore and of the metal itself. Statistics for the year 1900 give the imports of antimony in the form of regulus or metal into the United States at 3,632,843 pounds, valued at \$285,749, an increase of 472,146 pounds over 1899, and the imports of antimony ore for the same period at 6,035,734 pounds, valued at \$78,581, an increase of 2,053,601 pounds over last year.

ANTI-TYPHOID INOCULATION. See SERUM THERAPY.

ANTIVENENE. See SERUM THERAPY.

APPALACHIAN MOUNTAIN CLUB, organized in 1876, reorganized in 1878 as a chartered corporation of Massachusetts, is a fraternity of persons interested in the mountains of New England and adjacent regions, and aims to preserve the beauty and attractiveness of mountain resorts, in particular their forests; to build paths, camps, and other conveniences, construct and publish accurate maps and gather information; and to collect scientific data concerning the mountains. It had 1200 members in 1900, and 125 corresponding societies, and holds 20 meetings and from 6 to 9 excursions and field meetings a year. It has built in the White Mountains one hundred miles of paths and six shelters or camps. It has a small but notable library, and publishes *Appalachia* and an annual *Register*, besides books, pamphlets and maps from time to time. President for 1901, Alexis H. French, Brookline; corresponding secretary, John Ritchie, Jr., Box 2795, Boston. See CURTIS, WILLIAM B.

ARABIA, a large peninsula in southwestern Asia, lying east of the Red Sea, is partly under Turkish rule, partly independent, and partly under British protection or influence. Estimates of the total area vary from 1,000,000 to 1,230,000 square miles, and of the population from 4,000,000 to 12,000,000, the lower estimates with respect to the number of inhabitants probably being the more nearly correct. The Turkish power is almost wholly limited to the littoral of the Red Sea and part of the Persian Gulf. Aden (*q.v.*) with Perim is a dependency of the British Bombay government, and the independent state of Oman, on the Persian Gulf and Arabian Sea, is administered by a sultan, but maintains treaty relations with the Indian government, has an Indian resident at its capital, Muscat, and to a certain extent is under British influence. The interior of Arabia, much of which is arid, is inhabited by tribes which acknowledge no rulers other than their own chieftains. Arabia has a small Jewish population, but the great majority of the inhabitants are Arab or Bedouin Mohammedans. Bordering the Red Sea are the Turkish provinces of Hedjaz and Yemen. The former, containing the sacred cities of Mecca and Medina, and the port of Jeddah, has an approximate area of 96,500 square miles, and a population of 300,000; the latter, containing the towns of Assir, Sana, and Taiz, and the port of Hodeida, comprises about 77,200 square miles, and has an estimated population of 750,000. The climate of Arabia is said to be generally healthful, but the insanitary condition of the holy cities is a source of contagion. Arabian exports are small in quantity, and consist chiefly of sheep-skins, goat-skins, mother-of-pearl, gum, dates, and coffee; in addition Hedjaz annually exports to Syria about 20,000 of its famous camels. In 1897, the trade at the port of Jeddah, consisting principally of imports, was valued at about \$3,240,000, and that of Hodeida at about \$6,900,000. In 1898 the imports and exports at Bagdad amounted to about \$6,180,000 and \$3,114,000 respectively; at Basra, \$5,732,000 and \$4,053,000 respectively. For the year 1898-99 the imports of Oman were valued at \$2,592,000, and the exports \$1,697,000. Estimated populations of the principal cities are as follows: Bagdad, 150,000, of whom about one-eighth are Jews; Mecca, 60,000; Sana, 40,000 to 50,000, of whom about 20,000 are Jews; Hodeida, 30,000 to 50,000; Jedda, 20,000; Basra, 18,000; Medina, 15,000. Turkish subscriptions for the projected Hedjaz railway had reached the sum of nearly \$4,000,000 in the latter part of 1900.

The Muscat Affair.—In 1899 friction was caused between Great Britain and France through the lease of a port near Muscat, obtained by the latter power from the Sultan of Oman. The British government of India, fearing that the port would be used not only as a coaling but as a naval station, and holding that treaty stipulations between Great Britain and the sultan had been violated, forced the latter, under threat of bombardment, to annul the French cession. France held that only a coaling station was desired, and Great Britain disavowed the action of the Indian government. Early in September, 1900, the dispute was settled in favor of the French claim. It seems, however, that the sultan, Seyyid Feysal, was not favorable to the increase of French influence in this region, for it was reported that early in June, 1900, he went to Sohar, on the Gulf of Oman, in a British gunboat, and succeeded in forcing three native coasting vessels to renounce French protection. Under orders from the home government the French vessel *Drôme* at Muscat so intimidated the sultan that he decided to return their papers to the three merchant vessels, but upon the *Drôme's* departure he became more arrogant than before. It was intimated that the sultan's attitude was due to the influence of a foreign agent opposed to France.

ARAB RACES. See TYPHOID FEVER.

ARBITRATION, INTERNATIONAL. The year 1900 marked a decided advance in the cause of international arbitration, the ratification of the conventions and declarations of the Peace Conference held at The Hague in 1899, and the formation of the permanent Court of Arbitration, provided for by the same assembly, being the most noteworthy steps. The Powers that sent formal notices, approving the proceedings of the conference, are Denmark, Spain, France, Italy, Holland, Persia, Germany, Austria-Hungary, Belgium, Roumania, Bulgaria, Siam, and Russia, while those that forwarded partial ratifications are Portugal, Sweden and Norway, Great Britain, and the United States. The institution of the Court of Arbitration is the most important advance made in the history of this movement. The body is composed of four representatives from each of the fifteen leading nations of the world, from whom each of the Powers on the brink of war may select two, and these four select the umpire. Difficulties would still be met in such a course, for it is extremely likely that each of the nations implicated would be reluctant to submit to peaceful deliberation, the stronger through the aversion to the abdication of her power in preparedness for war, and the weaker through shame to admit her weakness or fear of national revolution as a consequence. But one of the conventions of the conference urges the signatory Powers to remind such belligerent states of their duty

in the matter, without awaiting their voluntary action. Thus, by the readiness of the court to receive questions for settlement, and the simple method of arriving at a settlement, the outlook of the cause seems bright, and it will be interesting to observe how the machinery will be started and what the result of the first dispute will be. During the year the South African Republic, in its effort to secure mediation for the settlement of its conflict with Great Britain, met with failure, and the International Peace Congress, which met at Paris, undertook to censure the latter state for her refusal to accept mediation or to accept arbitration, and furthermore commented unfavorably upon the indifference of the other nations that watched the struggle without an attempt to end it. Were these criticisms just the charges would be heavy indeed. But one thing must be remembered—Great Britain has never acknowledged the independence of the South African Republic, and caused its debarment from the conference for this reason. Consequently, it could not accept overtures from it for peace negotiations. On June 6, 7, and 8, the Lake Mohonk Conference met, and, after listening to numerous speeches and discussions on the general subject of arbitration, and particularly on The Hague Conference, adopted a declaration exulting in the fact that so many nations have ratified the proceedings of the conference, and that the United States was the first of all. It recognized the need of making the reference of disputes by the nations obligatory rather than merely permissive, and, toward the accomplishment of this result, recommended the consummation by this country of treaties to this effect. The people were urged to create such a public opinion that the Senate must promptly ratify all such instruments, public meetings in the interest of the cause were advised in the cities of the country, and all teachers in schools were besought to inculcate in the youth of the nation the superiority of the blessings of peace to the glories of war. The chief decision rendered during the year was the Delagoa Bay award. (See DELAGOA BAY.) Others were: Boundary dispute between France (for French Guiana) and Brazil, December 2 (see BRAZIL); boundary dispute between Costa Rica and Colombia, September 16 (see COSTA RICA); boundary dispute between Costa Rica and Nicaragua, July 24 (see COSTA RICA).

ARBITRATION, LABOR. The article LABOR LEGISLATION gives an account of the legislation with reference to arbitration in the course of the year 1900. In this place the status of arbitration in various countries and States will be briefly described and an account given of its workings so far as information is available. In the United States arbitration is provided for by the Federal law of 1898, which applies almost exclusively to railroads and their employees and imposes the duty of carrying out the provisions of the law on the commissioner of labor and the chairman of the Interstate Commerce Commission. The two officers are to take steps for conciliation or arbitration in case of disputes only after one of the parties to the controversy has expressed a desire for such a course. The law provides "that the respective parties to the award will each faithfully execute the same, and that the same may be specifically enforced in equity so far as the powers of a court of equity permit: *provided*, that no injunction or other legal process shall be issued which shall compel the performance by any laborer against his will of a contract for personal labor or service." So far there has been no opportunity to test the usefulness of the law. In addition to the Federal law, laws have been enacted by sixteen States within the last fifteen years creating permanent Boards of Arbitration and Conciliation. Of these Massachusetts and New York took the lead in 1886, and their laws have been used as models by most of the other States. They were followed by Montana, in 1887; Michigan, 1889; California, 1891; New Jersey, 1892; Ohio, 1893; Georgia, 1894; Wisconsin, Minnesota, Connecticut, and Illinois in 1895; Utah, 1896; Indiana, Idaho, and Colorado, 1897. The seven States of Pennsylvania, Iowa, Kansas, Maryland, Missouri, Texas, and Wyoming have enacted provisions at various times authorizing appointment by the courts, or the governor, of such boards as occasion may require. In all cases arbitration is made contingent upon the application of either of the parties to the board. In Massachusetts, Illinois, Wisconsin, Minnesota, California, Idaho, and Montana the decision of the board is binding upon the parties for six months or until either party has given sixty days' notice. In other States it may be enforced as a judgment, and in Indiana and Illinois even by contempt proceedings. The information as to the workings of the laws is very meagre. In most of the States sufficient time has not elapsed to test their usefulness. The report of the Massachusetts board for 1898 shows that in 22 cases the assistance of the board was required. In 1899, 37 cases came up for action by the board. The report of the New York Board of Mediation and Arbitration for 1900 shows that of 547 strikes and lockouts in the State during that year, more than 200 required the services of the board, exceeding all the past records in the history of the State. Unfortunately, neither the New York nor the Massachusetts boards give a summary account of the cases acted upon by them which would enable us to determine the effects of the interference by the board on the issue of the

disputes. The report of the Indiana Labor Commission for 1897-98 shows that "during the 18 months of its existence the commission investigated 46 labor controversies, of which 39 were strikes and lockouts, 2 were boycotts, and 5 were cases where strikes were prevented by the timely negotiations of the commissioners. . . . Of the 39 strikes and lockouts investigated, in 7 instances the commission failed to adjust the differences, in 4 cases agreements were reached without the mediation of the commission, and in 28 cases the settlement was due directly to such mediation. In 19 of the last-mentioned cases the employees secured either advanced wages or other improved conditions." The report of the Ohio Board of Arbitration for 1898 shows that since its organization in May, 1893, the board dealt with 83 disputes, of which 74 were strikes and 9 were lockouts. Of these, 68 were settled and 15 were not, but we are not told with what results to either side. The table below shows these facts in greater detail:

DISPUTES DEALT WITH BY BOARD OF ARBITRATION, BY CAUSES AND RESULTS,
1893 TO 1898.

Year.	Disputes considered.			Cause of dispute.					Result.	
	Strikes.	Lock-outs.	Total.	Reduction of wages.	Demand for increased wages.	Refusal to recognize unions.	Refusal to reinstate discharged men.	Other causes.	Settled.	Not settled.
1893 (a).....	10	..	10	6	..	2	..	2	9	1
1894.....	12	2	14	11	3	..	..	..	11	3
1895.....	12	..	12	4	3	..	1	4	11	1
1896.....	9	2	11	3	3	2	1	2	9	2
1897.....	15	4	19	7	8	1	1	2	14	5
1898.....	16	1	17	7	4	2	2	2	14	3
Total....	74	9	83	38	21	7	5	12	68	15

(a) May to December.

The arbitration in *Great Britain* as at present in vogue was provided for by an act of Parliament in 1896, entitled "An Act to Make Better Provision for the Prevention and Settlement of Trade Disputes." It leaves the administration of the law in the hands of the National Board of Trade, though the actual work of arbitration is carried out by voluntary boards elected by the representatives of the employers and workmen. The following is the method of procedure provided for by the law:

Where a difference exists or is apprehended between an employer, or any class of employers, and workmen, or between different classes of workmen, the Board of Trade may, if they think fit, exercise all or any of the following powers, namely:

1. Inquire into the causes and circumstances of the difference.
2. Take such steps as to the board may seem expedient for the purpose of enabling the parties to the difference to meet together, by themselves or their representatives, under the presidency of a chairman mutually agreed upon or nominated by the Board of Trade or by some other person or body, with a view to the amicable settlement of the difference.
3. On the application of employers or workmen interested, and after taking into consideration the existence and adequacy of means available for conciliation in the district or trade and the circumstances of the case, appoint a person or persons to act as conciliator or as a board of conciliation.
4. On the application of both parties to the difference, appoint an arbitrator.

If any person is so appointed to act as conciliator, he shall inquire into the causes and circumstances of the difference by communication with the parties, and otherwise shall endeavor to bring about a settlement of the difference, and shall report his proceedings to the Board of Trade.

If a settlement of the difference is effected either by conciliation or by arbitration, a memorandum of the terms thereof shall be drawn up and signed by the parties or their representatives, and a copy thereof shall be delivered to and kept by the Board of Trade.

Of the 623 disputes which occurred in *Great Britain* in 1900, affecting 184,773 persons, only 26 disputes, involving 8177 persons, were settled by conciliation or arbitration, or less than 4½ per cent. of all the disputes and persons involved. That, however, does not show all of the work accomplished by arbitration, since the latter is resorted to in *Great Britain* more for the prevention of strikes by settling questions likely to give rise to dispute than for the settlement of strikes which

have already broken out. Thus, of the 852,200 persons who received an increase of wages in 1900 by means of amicable arrangements, 476,100 persons, or 56 per cent., secured an advance through boards of conciliation, mediation, or arbitration. In 1899 the proportion was 47 per cent.

In *France*, arbitration is carried on either by the *Conseils de prud'hommes*, or by the labor councils, described in the article LABOR LEGISLATION. A bill is now pending in the French Parliament providing for compulsory arbitration. Of the 125 disputes which occurred in France in the nine months from March to November, only one dispute was arbitrated on the initiative of the employers; in 52 cases the initiative was taken by the workmen; in 6 cases by both; in 23 by the justice of the peace; as to the other cases, information is lacking. In 30 cases the employers declined to submit the case to arbitration. The arbitrators succeeded in settling 30 cases in all, affecting nearly 14,000 people. In a few cases the arbitrators were unable to agree. In several, the employers refused to abide by the decision after it had been rendered.

Arbitration in *Holland* is provided for by the law of 1897, which calls for the establishment of so-called Chambers of Labor in all those localities and trades where such institutions appear to be necessary and practicable. These chambers, composed of an equal number of employers and workmen, in addition to serving as bureaus of labor statistics, are "to give advice and frame agreements and regulations at the request of the parties interested; and to prevent and adjust disputes in regard to questions affecting labor, and, if necessity should arise, to bring about the reference of such disputes to arbitration between the parties." There are 62 such chambers at present in Holland, of which 8 are at Amsterdam, 6 at Rotterdam, 5 at Haarlem, 4 at The Hague, and the remainder scattered in other cities.

New Zealand is the only country in the world which has what one may call a real compulsory arbitration law which has seemed to work successfully. Its workings have been described in the past year by Mr. Henry D. Lloyd, the well-known writer on sociologic questions, who paid a visit to that country for that special purpose, and has published the results of his study in a book entitled *A Country Without Strikes*. The law is not a single enactment, but rather consists of several separate acts passed at various times and not yet codified into a single law. Its main points, according to Mr. Lloyd, are:

1. It applies only to industries in which there are trade unions.
2. It does not prevent private conciliation or arbitration.
3. Conciliation is exhausted by the state before it resorts to arbitration.
4. If conciliation is unsuccessful the disputants must arbitrate.
5. Disobedience of the award may be punished or not at the discretion of the court.

The compulsion of the law is threefold: Compulsory publicity, compulsory reference to a disinterested arbiter—provided the disputants will not arbitrate voluntarily—compulsory obedience to the award." The law begins to be compulsory only after one of the parties to the controversy has applied to the government with a request for arbitration. Until that is done the government does not interfere in the dispute. The law applies only to organized labor. That is, the state undertakes to arbitrate only between trade unions and employers, not between individual working men and their employers; but a body of workmen who have a grievance may easily invoke the law, since "any seven men can form a trade union under the act and claim all its privileges." The machinery provided for is very simple. There are Boards of Conciliation and a Court of Arbitration, both composed of an equal number of workmen and employers. The country is divided into a number of "industrial districts," each having its own Board of Conciliation; the Court of Arbitration acts for the whole country. "The Boards of Conciliation have four to six members, and are chosen for three years in each district by elections held separately by the associations of employers and the association of employees, under procedure carefully arranged by law, and under the supervision of a government officer, called the clerk of awards." The members of the board elect "some impartial person willing to act" as chairman who votes only in case of a tie. "The Court of Arbitration consists of three persons, who hold for three years, appointed by the governor-general, and of the three appointees one must be chosen by him from men nominated by the working men, and one from among men nominated by the capitalists. The third is a judge of the Supreme Court." The powers of the government in the law are described by Mr. Lloyd as follows: "Both the Boards of Conciliation and the Court of Arbitration have summary powers of visiting any premises and questioning any persons concerned in an industrial dispute. They can compel the attendance of witnesses and the production of any books and papers needed, and can imprison any one refusing to obey their summons. Every precaution is taken by the act to prevent injurious publicity of the secrets of business." The benefits which have resulted from the law, according to the author, are summed

up by him under twenty-two heads, of which we reproduce those that constitute statements of fact rather than of opinion. These are as follows:

1. Strikes and lockouts have been stopped.
2. Wages and terms have been fixed so that manufacturers can make their contracts ahead without fear of disturbance.
4. Disputes arise continually, new terms are fixed, but industry goes on without interruption.
5. No factory has been closed by the act.
6. The country is more prosperous than ever.
7. The awards of the Arbitration Court fix a standard of living which other courts accept in deciding cases affecting working men.
8. Awards made by compulsory arbitration are often renewed by voluntary agreement when they expire.
9. Trade unions are given new rights and are called upon to admit all competent working men to the trade.
11. Compulsory publicity gives the public, the real arbitrator, all the facts of every dispute.
12. Salaried classes, as well as wage earners, are claiming the benefits of arbitration.
13. Peaceable settlement with their men has been made possible for the majorities of the employers who wanted to arbitrate, but were prevented by minorities of their associates. See INDUSTRIAL COMMISSION.

ARCHAEOLOGICAL INSTITUTE OF AMERICA. The sixteenth annual meeting of the council was held at Columbia University, New York, on May 12, 1900, and, as usual, the two preceding days were devoted to the meetings of the managing committees of the schools at Athens and Rome. The total membership of the institute at that time numbered 905, including the members of the Detroit society. The admission of a new society from Missouri has since increased this total. The American School for Oriental Study and Research in Palestine has been organized through the co-operation of nineteen universities, colleges, and theological seminaries, and Professor Charles C. Torrey, of Yale University, has been appointed the first annual director for the year 1900-1901. In the field of American archæology, the council has authorized the appointment of a Fellow in American Archæology, but is still unable to engage in more extensive explorations. The two schools for classical study reported that the year 1899-1900 was one of prosperity and successful work, but both are still much hampered by lack of a permanent endowment, and the consequent necessity of depending on annual subscriptions. In common with the American Oriental Society, the American Philological Association, the Spelling Reform Association, the Society of Biblical Literature and Exegesis, the Modern Language Association, and the American Dialect Society, a meeting of the institute for the reading and discussion of scientific papers was held in Philadelphia, Penn., on December 27, 28, and 29, 1900. Naturally, the greater part of the fifty-three papers offered dealt with classical subjects, but Oriental, Christian, and American archæology were by no means neglected. The attendance was large and the interest manifested was so great, that it is probable that these meetings will be continued annually. As presenting important results from new fields of research, special mention may be made of the papers by Professor Louis Dyer, of Oxford University, on *New Aspects of Mycenaean Cultus*, and Mr. Howard Crosby Butler, of Princeton University, on *Sculpture in Northern Central Syria*. The institute publishes the *American Journal of Archaeology*, which is prepared under the direction of Professor John Henry Wright, of Harvard University. The officers of the Archæological Institute of America are: President, John Williams White, of Harvard University; vice-presidents, Charles P. Bowditch, of Boston; C. C. Cuyler, of New York; President Daniel C. Gilman, of Johns Hopkins University; Francis W. Kelsey, of the University of Michigan, and Thomas Day Seymour, of Yale University; treasurer, James H. Hyde, 120 Broadway, New York City; and secretary, Clarence H. Young, of Columbia University, New York. President Low, of Columbia, and Professor Charles Eliot Norton, of Harvard University, are honorary presidents of the institute and members of its council.

ARCHAEOLOGY. I. Babylonia. The year 1900 has seen three large excavations in progress in these regions, and three more are announced. The University of Pennsylvania expedition, of which Professor H. V. Hilprecht is the scientific director, has continued its work at Nippur with even greater success than attended the campaign of 1899. No detailed account has yet been published, and the only official statement of results is to be found in the letters of Professor Hilprecht in the *Sunday School Times*. These show that the chief objects of the present campaign have been attained. The extent of the pre-Sargonic Nippur has been ascertained to be much greater than had been supposed, though this is scarcely surprising

in view of the great importance of its temple of Bel before the rise of Babylon. In the eastern wall the large city gate has been discovered with the early foundations (dating back to before 4000 B.C.) still intact, while the upper courses show marks of long usage. The large central entrance for beasts is lower than the two side gates for foot passengers, who were obliged to ascend a flight of steps to enter the city. Another smaller gate and the remains of shops built against the wall helped to complete the picture of this very ancient city, which in its streets seems to bear new testimony to the unchanging character of the East. Another important result was the discovery, near the southern edge of the city, of the façade of a pre-Sargonic palace nearly 600 feet long. The building contained at least two stories, apparently furnished with small windows near the ceilings. Probably the most important discovery of the campaign, and one of which the full value can as yet scarcely be estimated, was the finding at a spot indicated by Dr. Hilprecht in 1889 of the great temple library, with many thousands of cuneiform tablets still lying on their original shelves of unbaked clay. Already this library has yielded upward of 19,000 documents, including a number of glossaries of the Sumerian language, used in the country before the Semitic invasion, and the explorers believe that they have only excavated about one-twentieth of the building. From other parts of the ruins about 6000 more inscriptions have been recovered, and the arrangement and decipherment of these records form an important part of the work to be done in the next few years. Though the most important results have been obtained in the lowest levels, the later history of the place has not been neglected. A very large number of graves have been opened, and much light gained on the history of Babylonian burial customs, while the large mass of pottery of all periods has been carefully studied with a view to fixing the chronological relations of typical forms. These excavations were discontinued in May, in order to give an opportunity for the working up of the results of this, the fourth, Pennsylvania expedition to this site, which still promises to yield large rewards to further excavations.

The German expedition under Dr. Koldewey has continued its work at Babylon, with results of value for our knowledge of the topography of the city, but with relatively small returns in "finds." One of the most important of these is a fine slab bearing on its face a relief of the Hittite god of war, and on the other side a long and perfectly preserved Hittite inscription. The great wall of the city previously discovered proved to be faced with glazed bricks showing white lions with yellow manes and yellow lions with green manes. A number of later Babylonian inscriptions and a few Assyrian have also been found, and on the east side of the mound El Kasr was discovered the temple of the goddess Nin-Makh. Later the expedition transferred its labors to one of the southern mounds, Tell Amrân, and soon found the remains of the storeroom of an engraver of seals, containing a good deal of material collected from various ruins of Babylonia, but not yet broken up. The work was to be continued through the summer, but no reports of the later results have yet appeared. The Germans are also preparing to investigate a mound discovered by Dr. Hilprecht, which seems to cover the ruins of a city of the pre-Sargonic time, but abandoned soon after 4000 B.C.

For the French, De Sarzec worked at Tello until May, but without large results, apart from the discovery of a great mass of cuneiform tablets. He was to resume work in the autumn, and De Morgan, the excavator of Susa, was to excavate Tell-Jökha, which conceals an unnamed city of apparently great antiquity. Another American expedition, to be led by Dr. Edgar J. Banks, has been organized to explore the ruins of Mugheir, which mark the site of Ur of the Chaldees. A valuable record of the progress of discovery and of the present state of our knowledge is found in *A History of Babylonia and Assyria*, in 2 vols., by Professor Robert William Rogers, of Drew Theological Seminary.

II. *Palestine*.—As usual, the chief archæological work in Palestine has been undertaken by the Palestine Exploration Fund, through its tireless agents, Dr. Bliss and Mr. Macalister. After the successful excavations at Tell Zakariya and Tell-es-Sâfi, work was begun at Tell-*ej-Judeideh*, at the southern end of the ridge of which Tell Zakariya forms the northern extremity. Here the city wall with four gates, one on each side, and twenty-four towers was traced, and found to be of the Roman period, with no trace of earlier fortifications, though the presence of pre-Israelitish and later pottery showed that the place had been inhabited, even if unfortified, from a very early time. The deeper trenches, while yielding many stone implements and a little metal, did not produce any important results except thirty-seven handles with royal seals, an unusually large number for a single site. A Roman house with ten rooms built about an atrium was also found on top of the earlier remains. Later in the year the work was transferred to Tell Sandahannah, a hill lying about half-way from Hebron to the sea, which turned out to be one of the best sites recently explored. Two towns, one above the other, were discovered; the upper belonging to the Greek period, while the lower seems to be a Jewish settlement of the eighth cen-

ture B.C. or later. Of these, the upper town has been fully cleared, and found to have a double line of walls, with the chief entrance at the east, where the gate leads into a large building surrounding a court. The exact use of this structure is unknown, but in one of the chambers were found sixteen lead figures representing prisoners with their arms tied behind their backs. The site yielded a large amount of the hitherto little known pottery of the third pre-Christian century, and about fifty inscriptions, chiefly Greek, and for the most part much defaced. As a place near by is still called Khurbet Mer'ash, Dr. Bliss is inclined to identify the town with the Maresshah of the Bible. Another interesting piece of news is the report of Professor S. I. Curtiss on his visit to a "high place" near Petra in Edom. This scene of open-air worship is on the top of a rocky ledge, and has been hewn from the solid rock. At one end is a hollow, probably for the worshippers, next comes a large platform, apparently intended for the slaughter of the victims, as there seem to be pits and a conduit for carrying away the blood. Beyond this platform is the altar proper, about three feet high, and with a surface six feet by nine, containing a shallow depression for the fire. At the side of the altar is a broad step or platform for the priest.

III. *Egypt*.—The most important event in Egyptian archæology seems to be the return of Professor Maspero to the head of the Department of Antiquities in Egypt. As this department controls the entire field of excavation, the care of the existing remains and the management of the museum at Cairo, the importance of this appointment of one of the leading Egyptologists, who is also a skilled scientific excavator, is fraught with good omens for the future, though the task before the new director-general is said to be most trying, involving as it does not merely the removal of the museum to its new quarters, and the repairing of the sadly damaged hall at Karnak, but also the suppression of unscientific digging by mere antiquity hunters, whose ignorant operations have already wrought so much irreparable ruin in Egypt. The disaster at Karnak in October, 1899, when eleven columns fell and five more were seriously damaged, led to extensive operations. Great banks of sand were erected about the threatened columns and the architraves and upper drums lowered to the ground. The great pylon of Rameses II. at the east end of the hall, which had shown signs of dangerous weakness, was also strengthened, and though much of the old beauty of these famous ruins has been lost, what remains seems once more secure. The government intends to remove the débris, make the foundations thoroughly secure, and, if possible, re-erect the fallen columns. The earth required for these operations was taken from parts of the temple needing further examination, and thus some interesting discoveries were made, including an account of the restoration of the temple of Ptah by Thutmosis III., which had been effaced by Amenophis IV., the worshipper of the solar disk, and afterward recut by Seti I. This work has also brought to light the fallen blocks from the Ptolemaic propylæa of the pretty little temple of Ptah, which can now be completely restored. The Egypt Exploration Fund and the Egyptian Research Account have both been busy at Abydos, which is still far from exhausted. Professor Petrie has already brought out an account of his special discoveries in *The Royal Tombs of the First Dynasty at Abydos*. He has succeeded in finding the names of several kings hitherto known only by their "hawk" names, and identifying them with those of Manetho's first dynasty. While the results are undoubtedly of great importance, his conclusions are still somewhat tentative, and his own future excavations and the study of other scholars may modify them in some particulars.

The excavations of the Berlin Museum at Abusir, besides clearing more of the sanctuary, brought to light a large number of inscriptions, many of them very fragmentary, but some forty in fine preservation. Two chambers contained fine reliefs, one a series representing scenes at a festival, the other scenes from country life with men, women, and animals such as are common in tombs, but hitherto unknown in a temple. Professor Steindorff, of Leipzig, has visited the oasis of Siwa, in which was once the famous temple and oracle of Ammon. This oasis and some others in the Libyan desert contain a number of late Egyptian and Greek tombs, many of them plundered, and several temples, but the most extensive ruins are at the reputed site of the ancient temple near Agurmi. It is noteworthy that on the monuments the "Prince of the Desert Regions" takes the place of the King of Egypt, which seems to indicate a certain independence of Egypt in the Ptolemaic period. At the small oasis of Baharije were discovered two new temples of the sixth century B.C., and a tomb of the thirteenth century B.C., decorated with valuable reliefs and inscriptions.

The past year has also seen the publication of the work done by the British school at Athens at Naucratis in 1899 in continuation of the work of Mr. Petrie in 1884-85. The most important result was the discovery of a large enclosure in the northern part, probably the Hellenion, with a great mass of inscribed and painted pottery and some four hundred terra-cottas. There is said to be no archæological evidence as

yet to cast doubt on the statement of Herodotus that the Greeks were settled at Naucratis about 570 B.C. Dr. Noack has also published a full report on his excavations at Alexandria in 1898-99, which yielded little in the way of smaller objects, but threw much light on the arrangement of the ancient streets, and the history of building in the ancient city. Clear evidence was found of four successive layers of buildings, of which the lowest must have belonged to the early Ptolemaic period, while the last was probably in the latter part of the second century A.D.

In the matter of Greek papyri the past year has been marked, not by any startling publications, but by great activity in this important field. The texts in the new volume of Messrs. Grenfell and Hunt do not offer many novelties, but the two volumes already published from Lord Amherst's collection containing the hieratic texts and the theological fragments, are of more interest, especially the latter, which includes a part of the apocryphal *Ascension of Isaiah*, known hitherto only in a late Greek manuscript, and a Christian hymn of little literary merit, but with the first twenty-four lines in an alphabetical acrostic. Two small fragments of Greek epodes, which have been somewhat tentatively assigned to Archilochus, and some rather longer fragments from Hesiodic poems, are the chief classical discoveries of the year. On the other hand, the excavations of the indefatigable Grenfell and Hunt for the University of California at Umm-el-Baragât (Tebtinis) have almost rivalled those at Oxyrhynchus. In the town some two hundred Greek documents were found, and the Ptolemaic cemetery yielded a large number of mummy cases made of layers of papyrus. Near by was a cemetery of mummied crocodiles which had been wrapped in papyri or stuffed with these rolls, for the most part in Greek. Unless literary papyri were used for the mummy cases, the recovery of ancient authors is not likely to be large, but Ptolemaic papyri have not been numerous, and this discovery, which nearly doubles the number of specimens, should throw much light on the course of Greek palæography. The importance of this branch of study has become so great that the *Archiv für Papyrusforschung* has been started to provide a central organ for the publication of discoveries and discussions.

In conclusion must be mentioned the important work by Dr. Sethe on the Egyptian verb, which marks an epoch in the study of the ancient grammar. The subject is one of exceeding difficulty, but many of the results are said to approach finality. The discussion furnishes many points in support of Erman's theory that the Egyptian language was originally imposed by a conquering tribe from Arabia, but largely modified and deprived of many of its Semitic characteristics by the native race. Under Sethe's treatment the resemblance of the original Egyptian to the Semitic verb is made strikingly prominent.

IV. *Asia Minor*.—In this region the important archæological events have been the reports from the excavations at Ephesus and Miletus, published early in the year and referring for the most part to work actually done during 1899. The Austrians at Ephesus have continued the uncovering of the theatre, of which the interior was cleared in 1898, and have thus brought to view a fine marble façade of the time of Claudius. It is now clear that the theatre was built in the time of Lysimachus, and the remains, though scanty, are sufficient to show that the plan was that of Dörpfeld's normal Greek theatre. In Roman times all this was changed; at first by the marble outer wall, and somewhat later by a Roman stage, with a superb back wall, at least three stories high. Later still further alterations were carried out. As the water in the old harbor had been lowered considerably by a large drain, operations were resumed in this quarter, and it was soon found that the great harbor was not, as previously supposed, Roman, but Hellenistic, and part of the original plan of the city, as shown by a broad street leading directly to the theatre, and ending with a triumphal arch, apparently decorated with a relief, representing a battle with barbarians. At the harbor was a large Roman building, and near this two ornamental gates, one Roman, not yet fully excavated, the other unquestionably early Hellenistic, though instead of the usual form of Greek propylæa, this seems like a forerunner of the Roman triumphal arch. In another part of the city, on the under side of the lintel of a Byzantine house, was inscribed the apocryphal correspondence between Christ and Abgarus of Edessa, which seems to have been intended as a charm against the entrance of evil. These excavations have yielded many inscriptions and much sculpture, including a remarkably fine bronze statue of an athlete using the strigil, which has been pieced together at Vienna from over two hundred fragments.

At Miletus the excavations of the Berlin Museum began at the point where it was known the sacred road from Didyma entered the city. The gate and walls were cleared, and a massive tower, with rooms and broad stairways discovered, all of the Hellenistic time or later. Extensive draining enabled the excavators to work also inside the city in the neighborhood of some Turkish ruins. Here a building like a theatre was found, but without a stage building. Doors from the orchestra led into a large court surrounded by colonnades, and containing the foundations of a large altar, in the neighborhood of which were found slabs decorated either with

reliefs of weapons or mythological scenes. This "theatre" was full of architectural fragments, and certainly had passed through many vicissitudes, but at one time had been used as a senate house. Nearly two hundred inscriptions were found, some of which were of the sixth century B.C., though most of them are of the Hellenistic period. The site is a difficult one to excavate, and no very striking discoveries are likely in the earlier years.

V. *Crete*.—As was expected, the establishment of a liberal government has opened Crete to archæologists, and a number of explorers are reaping a rich harvest from this little-known field. The Italians, led by Professor Halbherr, have been busy in general exploration of the western provinces, and have made a number of minor discoveries of considerable importance, including two more fragments of the famous laws of ancient Gortyn. At last reports Dr. Halbherr was excavating a Mycænæan and pre-Mycænæan fortress at Phæstos. The French, in 1899, made some further discoveries at Goulas, the classical Lato, clearing the little agora and a terrace with an altar beyond, but in 1900 left this site for Itanos, where some historical inscriptions were found. The lion's share of the past season, however, falls to Mr. Arthur Evans and the British school at Athens for a series of discoveries, more important for early Greek civilization than any since those of Schliemann at Mycænæ and Tiryns. After much difficulty Mr. Evans succeeded in purchasing the hill near Knossos, the legendary home of Minos, which previous excavations had marked as the site of the ancient palace. The result of his season's work was the partial excavation of a palace, which had been destroyed in the height of the Mycænæan civilization. The plan is not fully made out, nor can it be definitely settled until the whole area is cleared and the various alterations in the original building determined. In one part is an audience chamber, reached through a vestibule into which steps descend from the surrounding corridors. Around the audience room proper are stone benches, and in the centre of one side a stone throne with a high back. The opposite side of the room shows remains of a balustrade marking a deep basin to which a flight of steps descends, and which seems to have been open to the sky. The corridors, courts, and rooms of the palace have yielded many fragments of painting on stucco. In some cases merely ornamental or plant designs, but in others animal and human figures are introduced. In the throne-room are remains of griffins, and in one of the corridors was a long procession of life-size figures, for the most part men, advancing toward a woman in a long robe. Unfortunately, these walls are very low, and little more than the feet of most of the figures has survived. One fragment, however, shows us the head and body of a handsome youth bearing a stone vase. The whole figure exhibits a skill in drawing such as was known in some small works, but which far surpasses anything that could have been imagined for an artist of that time. Another part of the palace yielded a series of miniature pictures, representing crowds of men and women surrounding a building seemingly connected with religious worship. In still another part of the vast building a series of long and narrow chambers opening from a corridor contained rows of huge earthenware casks for storing grain and provisions, while underneath the floors were rows of stone boxes, lined with lead, probably to furnish a safe hiding place for treasures. In another series of rooms were found nearly two thousand clay tablets, bearing writing in the pre-Hellenic forms, which Mr. Evans first classified, while another group of chambers yielded tablets of different shape and inscribed with a more primitive pictographic writing, which the discoverer is inclined to associate with the Eteocretans of eastern Crete, as similar characters have been found on objects from that part of the island. All these inscriptions are as yet undeciphered, though it is reported that Mr. Evans has succeeded in determining the numerals from a series of apparent inventories. These excavations have also thrown light on the vexed question of Mycænæan worship. In two adjoining rooms in the centre of the palace were found two large stone pillars, and on each face of each stone used in the construction was inscribed the double-headed axe, chief symbol of the Carian and Cretan Zeus, which is repeated on many of the stones in other parts of the palace. Similar pillars were found by Mr. Hogarth in two houses in the settlement below the palace, and there can be no doubt that we have here the worship of the sacred pillar, of which traces can be easily found on Mycænæan gems and other works, and which is well known in Biblical and other Semitic religions. The absence of any fortifications seems to show that this palace was the seat of a powerful king, so secure in his rule as to fear no attack upon his city. It is in marked contrast to the strongly fortified castles in which the Mycænæan rulers of the mainland of Greece made their homes. The Cretan Exploration Fund, organized in 1899, has issued an earnest appeal for £3000 to carry these excavations to a successful issue, as they must contribute much to the solution of the many problems which beset the prehistoric era in Greece.

The director of the British school, Mr. Hogarth, not only excavated in the Mycænæan village near the palace, securing a large amount of fine pottery, but also

explored the Dictæan Cave of Zeus, which seems to have been the chief sanctuary in the earlier time, until the rise of the cave on Mount Ida. In the upper cavern dynamite cleared away many of the fallen rocks, and from the exposed floor a rich harvest of pottery and bronzes was obtained. Further search in the darkness and mud of a deep inner cavern showed that this was the most sacred place, for here were found multitudes of votive offerings, particularly little bronze double-axes, which had been placed in all available niches and cracks in the sides of the cave. A popular account of this work, with many illustrations, has been published by Mr. Hogarth in *The Monthly Review*, January, 1901, pp. 49-62. Miss Boyd, the holder of the Agnes Hoppin memorial fellowship at the American school at Athens, conducted excavations at her own expense for a month at Kavousi, discovering a number of tombs and several buildings, including a small "palace" of thirteen rooms. The objects found for the most part belong to the geometric period and the transition to the Iron Age, which immediately followed the decline of the Mycænæan civilization, and are expected to throw much light on this obscure time.

VI. *Greece*.—Like 1899, the past year 1900 has been rather a season of numerous small excavations than of great undertakings by the various societies which work on Greek soil. Almost the only continued work on a large scale is the difficult task of the American school at Corinth. Still another addition to the foreign schools at Athens has been made by the establishment of a Russian institute, whose building is to stand on the slope of Mount Lycabettus, near the American and British schools. The Greek Archæological Society has continued its work at Sunion, with results which seem to confirm the previous reports, that the ruined temple was really dedicated to Poseidon, and that the much smaller temple of Athena lay at the foot of the hill on a bay. In addition to the stoa, a building has been found near the propylæa, which an inscription seems to show was a granary. A small shrine of Asclepius was also found. At Athens the stoa of Attalos, after intermittent work extending over forty years, has at last been entirely cleared, and the arrangement of the building, once so perplexing, made perfectly intelligible. Late in 1900 the society began excavations at Kallithea, between Athens and Phaleron, resulting in the discovery of an ancient necropolis, yielding reliefs, inscriptions, and a very large mass of vases, some of which are described as of exceptional value. At Eretria the work of Kuruniotes has led to numerous interesting discoveries, especially in the important sanctuary of Apollo Daphnephoros in the southern part of the city, where the remains of an earlier temple have been found under the later walls. Of the later building fragments of the architectural members and, above all, considerable remains of the pediment sculptures have been recovered, executed in Parian marble and in the best style of the Island School, thus indicating a building of the end of the sixth or beginning of the fifth century B.C. In another part of the city an early necropolis, yielding some fine vases of the Dipylon type, and a well-preserved Roman bath have been excavated. The results of the long-continued work at Epidauros have been published in Greek by the Ephor-General of Antiquities, Dr. Kavvadias. This work gives a complete account of the discoveries from 1881-98, but rightly illustrates chiefly those buildings which have become known since 1891, as the previous work of the author and the great work of Deffrasse and Lechat are ample for the earlier structures. No complete treatment of the inscriptions is attempted, and these must still be sought chiefly in periodicals. The discovery of Mycænæan tombs on Kephallonia has furnished proof, hitherto very scanty, of the presence of that civilization among the western islands, but Ithaca still refuses to yield any specimens, and Professor Dörpfeld has recently proposed and sustained by strong arguments the thesis that the Homeric Ithaca is to be identified with the classical Leukas (now Santa Maura), same with the modern Ithaca, and Dulichion with Kephallonia. Excavations alone can settle this point, and these are to be undertaken by Dörpfeld.

The French school has returned to Delphi to excavate the temple of Athena, but has been chiefly occupied in studying the material already collected and in preparing for new work at Tegea and Delos. Director Homolle has been enabled to collect from the inscriptions a fairly complete account of the financial administration during the rebuilding of the great temple after 356 B.C., and also to determine with comparative certainty the succession of the annual archons from 358-315 B.C., thus furnishing an important contribution toward an accurate chronology.

On March 12, 1900, the German Archæological Institute at Athens celebrated its twenty-fifth anniversary in the new library hall, which has just been added to their building. This house, formerly the property of Dr. Schliemann, has just been bought by the German government, which also furnished the funds for the addition. In excavation and exploration the institute has not been engaged in any great works, but the ruins of the Eubœan Dystos have been carefully described, and the conduit and fountain of Theagenes, the tyrant of Megara, have been partially examined, and are to be fully excavated as likely to throw much light on the similar

work of Pisistratos at Athens. Baron Hiller von Gaertringen continued his work at Thera and expected to complete the excavation of Mesavouno, the ancient capital, during the summer. His work has shown that the inhabitants secured a reserve supply of water by excavating a great cistern under the seats of the theatre. At Paros a long but, unfortunately, very badly mutilated inscription has been found in honor of the Parian poet, Archilochos, and containing a number of new fragments from his poems. Excavations in search of the celebrated temple of Asclepios on the island of Kos have also begun, and have led to the discovery of a Greek theatre, Roman buildings, and a temple, but no detailed report has yet appeared. The institute has suffered a heavy loss in the call of the second secretary, Dr. Paul Wolters, to a professorship at Würzburg.

As has been said, the most important work of the year has been that of the American school at Corinth. Last year the discovery of the fountain of Glauke and the Propylæa of the Agora (see *INTERNATIONAL YEAR-BOOK*, 1899, page 47) added to the fixed points of Corinthian topography, and pointed to the clearing of the Agora as the next work. The space near the Propylæa had yielded almost nothing, and all of the gateway except the foundations had disappeared, so that the outlook was not encouraging. This year the excavators worked to the west of the Propylæa, as far as the slope of the hill on which stand the ruins of the temple of Apollo. Almost immediately success was attained in the discovery of a mass of architectural fragments, including two colossal figures of youths in barbarian dress and Phrygian caps, and two colossal female heads. The cutting of the marble made it clear that these figures stood against pilasters crowned with Corinthian capitals, and the fragments recovered gave an entire architectural system. As it seems from coins that the Propylæa had the shape of a Roman arch, it is likely that these blocks were part of that structure torn from their places in later times, though for what they were used in their new position is not easily explained. From the same structure, probably, comes a fine piece of coffered ceiling, with reliefs in the depressions. Proceeding still farther westward, the covering soil became much deeper as the temple hill was approached, and under this mass of earth another important discovery was made. At the level of the Agora in Roman times was found a broad stone platform, on which stood a stone base, probably once occupied by a statue. On one side of the platform was a balustrade in the form of Doric metopes and triglyphs, which seems to have been taken from some temple, and is of great archæological importance, as its fresh colors in blue, red, and yellow make it a fine example of Greek architectural polychromy. Through an opening in this balustrade a flight of steps leads down into a chamber beneath the stone platform, which is seen to be supported by five columns. This chamber contains intact a fountain of the Greek period, in whose façade are two bronze lions' heads, through which the water once flowed, as below are holes for the placing of pitchers. As the other fountains previously found had either been rebuilt by the Romans or severely damaged by natural causes, the value of this discovery is easily seen. Not far away a vaulted chamber about twenty-five feet high was found near the close of the season and thoroughly cleared, but the ground around still remains untouched, so that the character of this structure is not yet determined. The expense of these excavations (about \$2200) was met by private contributions, and their continuance must depend largely upon the same source. Their importance in the eyes of the Greek government is shown by its decision to erect a special museum at Corinth to contain the numerous fragments of sculpture, pottery, and other small objects, as well as the somewhat scanty store of inscriptions. In the opinion of the director, Professor Richardson, the point now reached, close to the foot of the hill, warrants the belief that the next season's work will yield even more important results.

The British school has discontinued its work at Melos, and in 1900 was only engaged in excavations in Crete. The director, Mr. D. G. Hogarth, has resigned in order to devote himself entirely to the work of exploration, and Mr. R. C. Bosanquet, who has been assistant director, has been appointed in his place.

VII. *Italy*.—The Roman Forum is still the centre of archæological interest, for the excavations of Signor Boni continue to throw light on old questions and raise up hosts of new ones. The discussion over the "black stone," and, above all, the inscribed cippus, continues to rage, though it cannot be said that much progress has been made. Interesting as a monument of early Latin writing the inscription certainly is, but its fragmentary condition contributes little to our knowledge of the language, while the fact that the Latin alphabet was derived from the Greeks of Campania at an early date did not need the new evidence of this stone. The excavations in front of San Adriano show that the ancient Curia was reached from the Comitium by a broad flight of steps, which were gradually disused as the level was raised. The door of the church has been raised several times, and the last change placed the entrance some twenty-one feet above the ancient level. The Comitium of the latest period, as restored by Maxentius about 308 A.D., has also been laid bare. The fur-

ther excavation of the Basilica Æmilia has made possible the recovery of the main features, even though the superstructure has been almost destroyed. There seem to have been fifteen pilasters in the front line, with a projecting wing at each end, giving a total length of at least 93 yards. The central hall had a nave 53 feet wide and two aisles, each of 14 feet. In connection with this building there has come to light a series of sewers, one of which Boni regards as the original Cloaca Maxima. It seems to have been closed since the second century B.C., but the filling has already yielded many objects from the preceding centuries. Lesser discoveries have also been made near the Atrium Vestæ, where a large brick building has been plausibly identified by Lanciani with the Porticus Margaritaria, and also along the line of the Sacred Way, and the latest unofficial reports indicate that the Rostra of the time of Cæsar and the republic have come to light, while the previously known structure is to be referred to the time of the empire, when the level of the Forum was considerably raised.

The most interesting discoveries were made in the neighborhood of the temple of Castor in the region between the Forum and the Palatine, where the comparatively recent church of Santa Maria Liberatrice was bought by the government, and its removal at once commenced. This part of the Forum was inhabited for a long time, and the ancient structures were plundered for building material. In the centre of the Augusteum was built the church of Santa Maria Antiqua, considerable remains of which have come to light upon the destruction of the modern building. From an archæological point of view the great discovery is the fountain of Juturna, where the Dioscuri were said to have watered their horses after bringing tidings of the victory at Lake Regillus. After the draining of the Forum a fountain or tank was built to collect the waters of this pool, which were believed to have healing virtues. This tank has now been found, containing in the centre a pedestal, which, judging from some fragments of sculpture, was occupied by a group of the Dioscuri watering their horses. Connected with the fountain, and about sixty feet away, was a well, of which the puteal bears an inscription showing that it was set up by M. Barbatus Pollio, who was curule ædile under Augustus. In front of this well-curb was a marble altar bearing a relief representing a man and woman, which has been tentatively explained as the parting of Juturna from her brother Turnus. The work in the Forum was seriously affected by the exceptionally severe floods which prevailed in Rome during the latter part of the year, covering the area in some places to the depth of twelve feet, and reaching the highest point recorded in the century. Excavations were carried on as usual at Pompeii and in other parts of Italy, and many small additions have been made to our knowledge of the early civilizations of the peninsula, but none seem of special interest, so far as the summary reports indicate. Of good omen for the scientific conduct of excavations and the proper recording of results is the retirement of Signor Barnabei from the Department of Fine Arts and the appointment of the more scientific Signor Fiorilli in his place. It is to be regretted that the Italian government still refuses all foreigners permission to excavate, as the skilled members of the foreign schools could accomplish much important work which the government cannot afford to carry out.

VIII. *Africa*.—The director of antiquities in Tunis, Paul Gauckler, has continued his excavations in the neighborhood of Carthage, where the Punic necropolis has yielded many more small objects, and where the Odeum, built by Vigellius Saturninus, which Tertullian mentions, has been found. It had been destroyed by the Vandals, but the ruins yielded some Græco-Roman statues, portraits of the emperors, and other smaller objects. At St. Monica Father Delattre has also excavated a Punic necropolis, finding the usual mass of small objects, including a Punic funerary inscription of forty-six letters. The work of discovery in French Africa advances rapidly, owing to the numerous small excavations undertaken by the French officers in the neighborhood of their garrisons. Thus Lieutenant Gombeaud has excavated the Roman fort at Elf-Hagneuf, which proved to be very well preserved, and yielded several inscriptions and works of art. Director Gauckler also contributed to the Paris Exposition a noteworthy exhibit of Tunisian art and antiquities, including reproductions of many important monuments and a valuable relief map of Carthage.

A Danish expedition, supported by a man-of-war, has started to excavate Cyrene, where important discoveries may be expected, if it is found possible to overcome the hostility of the natives, who have come to regard it as a religious duty to exclude all Europeans from their country.

IX. *Germany and Austria*.—The great work of exploration in Germany, the determination of the *limes*, built by the Romans as the boundary from the Rhine to the Danube, is drawing to a close. The reports show that the starting point at the Rhine has been found between Rheinbrohl and Hönningen, and that the course of the later *limes* has been determined, except in three short stretches, amounting to about 43 kilometres. The older *limes* is far more difficult to trace, as in many

cases the remains have almost disappeared. It is clear that it followed the natural boundaries, and was marked by a number of wooden watch-towers, connected by a patrol system and within signalling distance of the second line of forts. This system, at least from the Lahn through the Taunus, seems to have been built about the time of Domitian's war with the Chatti in 83 A.D., and destroyed during the uprising five years later. The later *limes*, which follows in general a straight line, without reference to natural conditions, and is defended by a wooden palisade, seems to have been begun about the time of Hadrian's visit to Germany in 121 A.D., though its completion may well have covered more than twenty-five years.

In northern Alsace and the southern Palatinate the ancient fortifications have been studied and five varieties distinguished, of which the earliest belong in the pre-Roman time, while the latest are Frankish or mediæval. In the same region, near Neustadt on the Haardt, have been excavated two cemeteries containing tumuli of the Hallstatt period, which extends from about 800-400 B.C. Near Haltern on the Lippe there has been discovered a Roman settlement and fort, which is probably the important post of Aliso, established by Drusus in 11 B.C.

In Austria the excavations at the old Roman town of Carnuntum have brought to light a storehouse for weapons and provisions, in which were found over a thousand Roman weapons, and remains of grain and other supplies, as well as some important inscriptions. For the first time in these excavations some information has also been gained as to the arrangements for supplying drinking water to this military post.

X. England.—The old excavations at Silchester, Caerwent, and along Hadrian's Wall have been continued, and new ones undertaken at Richborough, Cardiff, and Gelligaer, and in all cases interesting discoveries are reported. Along the Wall it has been shown that an earlier barrier of turf was followed by one of stone, across which were built forts. This seems to make it possible that the earlier wall was built by Hadrian and the later by Severus, though further work is needed to settle this question. Cardiff Castle is shown to be built on a site occupied by two successive Roman forts, and another fort has been found fourteen miles north at Gelligaer.

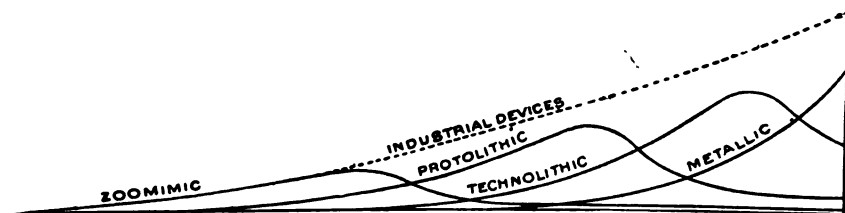
ARCHAEOLOGY, AMERICAN. The distinctive characteristics of American archæology arise in the fact that the antiquities of the western hemisphere represent peoples and culture-grades widely distinct from those of the present population. Accordingly, the relics require special interpretation; they are not merely hieroglyph records in strange languages, to be interpreted by aid, and in terms, of other speech-records; they are rather the unwitting records of thought alien to the Caucasian, if not to the Aryan, mind, and they can be fully interpreted only in the light of the increasingly definite mentations marking the whole long line of human progress from the savagery of the prime to the enlightenment of the present. Fortunately, occidental students find a means of entering into primal thought in the surviving savage and barbarous tribes of both American continents; and during recent years it is recognized by the leading students that the only safe way to archæologic interpretation leads through ethnologic inquiry.

Definitions.—During the last few months, more than during any similar period before, American archæologists have manifested appreciation of psychic factors in their researches; and the last year of the nineteenth century may be signalized as one of notable co-ordination between the more abstract and remote aspect of archæology and the more concrete and vital issues involved in the study of living peoples. Thus, Powell, in a series of articles running through the current volume of the *American Anthropologist*, unites archæology and ethnology, just as modern naturalists unite paleontology and biology in their interpretations of nature; and at the same time he views the æsthetic and technic productions of peoples (and most ancient and modern artifacts represent such productions) as more or less imperfect mirrors of the minds of the producers. So, too, Boas, in a presidential address before the Folk-Lore Society, entitled *The Mind of Primitive Man*, combines the entire range of human productions, from the simplest artifacts to the highest concepts, and from remote prehistory to current times, and emphasizes the many points of similarity between high and low, ancient and modern. In like manner, Holmes opened the year with an interpretation of the long-obscure (and not unnaturally misleading) relics of the Pacific coast, based on study of the physical and psychical activities of the aborigines still surviving in the Tuolumne and American and other valleys; and, by means of the identity in concept underlying the entire series of artifacts, he was able to identify the relics adventitiously incorporated in the auriferous gravels with those of tribes now living. Similarly, Cushing (whose untimely death was one of the melancholy events of the year) found the value of his collections of relics from the Florida muck-beds greatly enhanced by alternative use, first, in eliciting the concepts of surviving Amerinds, and secondly, in elucidating the more highly differentiated artifacts still in use by the tribesmen; and related

methods were pursued with success by Dorsey in dealing with the rich collections of the Field Columbian Museum, by Culin in arranging and interpreting the archæologic material in the Philadelphia Museum, and by various other investigators. The tendency toward the interpretation of artifacts in terms of thought-development is represented also by McGee's genetic classification of implements, designed to replace the classification based on adventive features of stone and other tools. In this classification (announced in the *Seventeenth Annual Report* of the Bureau of American Ethnology, pp. 249-254) the most primitive stage corresponds with that called prelithic by Cushing—i.e., the stage in which motives as well as materials are borrowed largely from semi-deified animals, venerated and imitated as mystical tutelaries of persons, families, and clans; but, in view of the predominant zoic motives and materials, the stage may be defined constructively as *zoomimic*. The second, or *protolithic*, stage is that characterized by the use of stone or other obdurate material, selected at random and shaped only by the wear of use; while the third, or *technolithic*, stage is characterized by the employment of stone or other material, selected by the aid of experience and shaped in accordance with precon-

CONSPICUOUS OF INDUSTRIAL DEVELOPMENT.

Stages.	Typical Materials.	Typical Products.	Essential Ideas.
1. Zoomimic.....	Bestial organs...	Awls, spears, harpoons, arrows.	Zootheistic faith.
A. Transitional	Symbolized organs	Piercing and tearing implements.	Faith + craft.
2. Protolithic.....	Natural stones...	Hammers and grinders.	Mechanical chance.
B. Transitional	Cleft stones.....	Grinders and cutters.	Chance + craft.
3. Technolithic....	Artificialized Stones.	Chipped, battered, and polished implements.	Designed shapement by molar action.
C. Transitional	Malleable native metals.	Copper celts, gold ornaments, etc.	Designed shapement by molar action + chance heating.
4. Metallurgic.....	Smelted ores....	Steel tools, etc.....	Shapement by molar and molecular action.



DIAGRAMATIC OUTLINE OF INDUSTRIAL DEVELOPMENT.

ceived design. Like developmental stages generally, these stages in the growth of handicraft overlap, each borrowing much from the antecedent stage, and contributing a quota of method (or knowledge) to the next higher. The characteristics and relations of the stages and transitional sub-stages are summarized and depicted in the accompanying table and diagram. While strictly genetic, and hence of special use in tracing and defining the earlier episodes in technologic development with which it is the province of archæology to deal, the classification is not primarily chronologic, and is susceptible of correlation with current chronologies only by aid of collateral data—just, e.g. as the geologic time-scale based on the natural stages of terrestrial development can be reduced to chronologic periods only by careful weighing of many factors, and then only in approximate measure. The chief limitation to chronologic application of the genetic seriation of stages in handicraft is geographic; for the stages run in normal sequence only in isolated communities, or at most in communities of corresponding culture-grade, and are interrupted in rate and mode of progress by intertribal and international contact. Yet, even in this direction, the limitations of the genetic classification are still less than those of adventive arrangements; while in all other respects the arrangement in terms of natural development is the more convenient and useful. During the year, the collec-

tive designation for the aboriginal American tribes proposed by the Anthropological Society of Washington in 1898—viz., *Amerind*—has passed into fairly general use; two or three American students have expressed exception to the term on different grounds, but nearly all of the more prominent ethnologists and archæologists, and some of the leading lexicographers, have adopted it.

Instrumentalities.—The leading institution engaged in archæologic researches in United States and contiguous territory during the year 1900 was the Smithsonian, through its ancillaries, the Bureau of American Ethnology and the United States National Museum. The operations of archæologic interest in the bureau were conducted chiefly in Arizona, Colorado, Illinois, Maine, New Mexico, and in the neighboring state of Sonora, Mexico, as well as in several of the Antillean islands; while the museum made collections and prosecuted researches in various parts of the United States, and also in several Spanish-American countries. The researches and collections made by the American Museum of Natural History, New York, were particularly noteworthy; the Jesup North Pacific expeditions to California and the Pueblo region yielded rich additions to knowledge, and the work carried forward in Mexico under the munificence of Duc de Loubat was gratifyingly productive, as were also the explorations in Peru and Bolivia. The work by the Museum of Archæology and Paleontology of the University of Pennsylvania, Philadelphia, was greatly facilitated during the year by the Wanamaker expedition through western United States and British Columbia; and the same expedition contributed also to the substantial enrichment of the Field Columbian Museum (Chicago) in both archæologic and ethnologic material; the former museum was also enriched during the year by the notably valuable Dickeson collection of antiquities from western Mississippi, while specially important contributions came to the latter from the Pueblo region of Arizona and New Mexico. The Peabody Museum of Archæology and Ethnology of Harvard University (Cambridge) continued active and acquired material of special value from Central American and South American ruins by means of expeditions conducted under the auspices of Messrs. Charles P. Bowditch and Stephen Salisbury. The Carnegie Museum, Pittsburgh, Golden Gate Park Museum, San Francisco, and the State Historical and Natural History Society of Colorado, Denver, prosecuted researches of importance; the work of the Ohio State Archæological and Historical Society, Columbus, was unprecedentedly productive; notable archæologic researches were made in the interests of the University of California under special endowment by Mrs. Phœbe A. Hearst; while the independent expedition of Clarence B. Moore, Philadelphia, to western Florida was both important and productive. Of special note, too, were the researches and collections made by the Museo Nacional de Mexico, and by the Archæological Museum connected with the Education Department of Ontario, Toronto, Canada. Several of these institutions issue periodic or occasional publications announcing important results; while the principal media for more general publications remain *The American Anthropologist*, New York, *The American Antiquarian*, Chicago, and the proceedings of the American Society for the Advancement of Science, Washington. The first number of a new periodical (*Records of the Past*, Washington), projected during the year to summarize American as well as Eurasian and African archæology, was on the press in December, the contents comprising among other articles, a review of "Archæological Achievements of the Nineteenth Century," by the editor, Dr. Henry Mason Baum. The researches are discussed and co-ordinated in several general and local scientific societies, chiefly the Anthropological Section of the American Association (in semi-annual meetings), the Anthropological Society of Washington, and the Anthropological Society of New York. There has been noteworthy activity in publication for the trade concerning archæology; following the line represented by Thomas' *Introduction to the Study of American Archæology*, distributed in 1899, the year has witnessed the issue of *Prehistoric Implements, a Reference Book*, by Warren K. Moorehead with several collaborators, and *The Cliff Dwellers and Pueblos*, by S. D. Peet; while Frederick S. Dellenbaugh, in *The North Americans of Yesterday*, deals largely with the antiquities of the passing tribes.

Zoomimic Artifacts.—One of the noteworthy investigations of the year was that of the Baum village in Ross County, O., by Mills; and among the more interesting discoveries were those of bone implements, notably arrow-points and fish-hooks. The former are especially significant as indices to that curious aboriginal philosophy discovered through ethnologic studies and attested by various lines of archæologic evidence. To the primitive mind the arrow derives efficiency from mystical sources, which must be symbolized in the implement itself—i.e., it is conceived to fly swift and straight by virtue of the feathers from wings or tails of swift-flying birds attached to the shaft, and is conceived to penetrate tissues by virtue of the rending tooth (actual or symbolized) used as foreshaft or point. An early stage in the development of implement and motive was worked out during the year by McGee, by

means of the arrows and harpoons and firesticks of the Seri Indians; in Seri thought these diverse implements are homologous, and derive character from the actual or symbolic tooth with which each is tipped, and the concept is still crystallized in speech (e.g., *ahst=tooth*; *ahst=stone*; *ahstahst=arrow-point*); but the Mills discoveries seem to stand for a more advanced stage of thought, in which the wing-bone of a swift bird or the leg-bone of a fleet mammal, symbolizing at once the rending capacity of the tooth and the motile function of limb, replaced the more primitive device. Although less clearly indicative of motive, the fish-hooks of the Baum site, made from long bones of fish-eating water-fowl and raptorial, would seem to reflect a similar philosophy; while the implements are of technical interest in that they represent manufacture by means of rubbing or grinding only, in contradistinction from the process of manufacture beginning with a perforation, previously worked out by Putnam from specimens found in other Ohio localities. The preliminary announcements of Cushing's Florida work (left incomplete by his death) denote various examples of zoomimic manufacture; while Moore's memoir on antiquities of the Florida coast illustrates and describes numerous artifacts attesting the prevalence, if not the predominance, of motives derived from local animals in that interesting archæologic district. Several of the bone implements and bone points collected by Smith in the Thompson River region, British Columbia, are of similar import; and their association with both protolithic and technolithic hammers, pestles, mortars, celts, stone points, etc., illustrates the blending of motives and overlapping of stages characteristic of more advanced aboriginal culture. A noteworthy exposition of the symbolism dominating zoomimic culture and affecting the next two stages of human development, albeit derived from a living tribe with little reference to antiquities, appeared during the year in *Symbolism of the Huichol Indians*, by Lumholtz; it abounds in illustrations of that zootheism characteristic of all primitive folk, and so well displayed by the American aborigines.

Protolithic Artifacts.—Various specimens exemplifying designless selection and shaping of stone were collected in California by Rust, while other examples were illustrated and described by Yates, Meredith, Moorehead, and others; but the work of the year on productions of this class has been incidental rather than special, descriptive rather than constructive.

Technolithic Artifacts.—Customary activity has been maintained in the collection of design-shaped stone implements representing aboriginal industry, and all the museums have been materially enriched. A noteworthy piece of collecting, conducted with careful consideration of associations, was made on Mill Creek, Ill. by Holmes and Phillips; the material gathered comprises a great number of both blanks and finished implements, skilfully chipped from chert which was obtained by quarrying operations of remarkable extent and depth. The Branch collection from the Lesser Antilles, received by the National Museum during the year, is of special interest by reason of the commingling of South American and North American types, which seem clearly to attest occasional intermigration, if not more regular interchange, between the two continents during prehistoric times; it throws much light on the extension of what are known as Caribbean artifacts into the southeastern quarter of the northern continent, and supplements investigations made on the ground in the early months of 1900 by Powell and Holmes. Some of Moore's observations in western Florida are of related import. On the whole, the artifacts now indicate more clearly than ever before that there was a considerable infusion of culture into the territory of the United States from South American shores and the Antillean islands—a condition of things closely paralleling that already detected in the Pueblo region, with its unmistakable evidences of commingling between northern blood and southern culture. Among the interesting technolithic artifacts illustrated in Moorehead's *Prehistoric Implements*, none are more noteworthy than the curved points of delicately chipped obsidian found in the vicinity of Stockton, Cal., by Meredith and Hughes; while their function has not been established, it seems probable that they were used in shamanistic surgical operations, much as were the "scarificators" found by Yates on Santa Rôa Island and elsewhere in southern California, and interpreted by aid of information obtained from aged aborigines. The "Stockton curves"—as the points are designated by Meredith—are found associated with multiple-barb bone (harpoon?) points, suggesting vestigial zoomimic motives, together with incised bones, clay labrets, elaborate shell gorgets apparently combining the dual motives of shield and effigy-charged weapon, and various other artifacts indicating a remarkable range and blending of cultural and regional influences. Certain artifacts of the Bandler collection from Bolivia, made for the American Museum, New York, are also of special interest as illustrating the survival of primitive motives in more advanced culture, and the fertilizing of æsthetic and industrial concepts by intertribal contact and the consequent interchange of culture.

General Artifacts.—Entering inhospitable and little known portions of Arizona

during the year, Fewkes discovered prehistoric habitations of several varieties, including an essentially new type of cavate dwelling, excavated in pockets of softer material interspersed irregularly with boulder-like masses of obdurate lava in extensive volcanic deposits; and by means of the associated relics he was able to ascertain that, while some of the habitations may have been occupied well into the Columbian era, the excavation was effected by means of stone implements in distinctively pre-Columbian fashion. Saville's researches in the ancient city of Mitla were notably productive of types of prehistoric sculpture and moulding; while Maudsley, of England, and Hamy, of France, published important contributions to knowledge concerning the monuments and glyphs left by the most highly advanced peoples of aboriginal America. Thomas, Selser, Goodman, and several other students continued the investigation of the calendaric and related glyphs; the first named made a noteworthy contribution toward the interpretation of both the calendaric and the numeral systems of the ancient folk in the form of an extended memoir on *Mayan Calendar Systems*; while Bowditch assembled for discussion and republication in America the scattered German and French literature concerning these prehistoric records, and Gann prepared an original memoir descriptive of the carvings, symbolic mouldings, zootheistic effigies, and related antiquities of British Honduras. On the whole, the progress of the year in both description and interpretation of the elaborate and distinctive monuments left by the peculiarly cultured tribes of ancient Mexico and Central America has been gratifying.

Human Antiquity.—Excepting a discovery of doubtful import by Osborn in later Tertiary deposits of western United States, no noteworthy evidence of high human antiquity in North America has been brought to light during the year; and while interesting suggestions as to the association of man with extinct animals have been found in Argentina, the indications may well be, as pointed out by Hatcher, held in abeyance pending more exact determination and correlation of the later stages in the physical development of South America. The close of the century affords opportunity for a review of the evidences of high human antiquity in America, which have been discussed and weighed from decade to decade; but space admits of only the briefest summary: In 1800 little attention or credence was given to indications of the existence of man on the globe for more than a few millenniums; by the middle of the century even the most conservative students of archæology were seriously weighing associations of human relics with geologic deposits, and by the end of the third quarter of the century the opinion that North America was peopled in the Pleistocene, or even in later Tertiary, times, was fairly general; while during the last twenty-five years the associations have been investigated more critically, and interpreted in the light of larger knowledge concerning geologic development, with the effect of materially reducing the supposed weight of the evidence. So, on the whole, the question of the antiquity of mankind in America remains open, with a presumption (derived chiefly from Eurasian researches) in favor of an origin running back well toward, or possibly beyond, the beginning of the Pleistocene, but with scarce a single indubitable fact attesting human existence on the western hemisphere before even the latest ice invasion of the glacial period.

ARCHITECTS, AMERICAN INSTITUTE OF, founded in 1857, had in 1900 a membership of 399 fellows, 116 associates, 60 honorary and 69 corresponding members. General meeting for 1901 to be in Buffalo, N. Y., in October. The institute publishes annual *Proceedings* and a quarterly *Bulletin*. President, Robert S. Peabody, Boston, Mass.; secretary, Glenn Brown, Washington, D. C. See **ARCHITECTURE**.

ARCHITECTURE. There have been a number of causes contributing to the flourishing condition of this art during the last year of the nineteenth century. Paris with its exposition, disappointing in some ways, it is true, has shown the present tendency of the modern French architect; in England public buildings have furnished subjects for competitive designs; while in the United States the prosperity of recent years has stimulated the building of handsome edifices, either for dwellings or for religious and educational memorials. The improvement in the character of the buildings erected by state and general government continues, and the supervising architect of the Treasury Department states in his annual report that the practice of procuring designs by competition among architects has proved extremely satisfactory. He believes, however, that the direction and supervision of erection should be under the control of the supervising architect's office, but many of the members of the American Institute of Architects do not sustain him in this position, as they say it is the function of the architect to erect buildings, not merely to sell drawings. During the year the question of professional ethics in the United States has been discussed to a large extent, owing to the censure by the Board of Directors of the American Institute of Architects, passed upon H. I. Cobb and Harding & Gooch. The former submitted his plans for the Pennsylvania State Cap-

itol in a second competition, notwithstanding the fact that the commission in charge of the selection of designs had ignored the report of their experts. This conduct by Mr. Cobb was considered a violation of the terms of the competition and unprofessional and prejudicial to the interests of the profession. The other offenders were censured because they attempted to nullify the competition after they had learned that their drawings had been excluded by the board of experts upon technical grounds.

International Congress of Architects.—The Fifth International Congress of Architects was held in the Hémicycle of the École des Beaux-Arts in Paris, and was attended by between three and four hundred architects, the United States being represented by Mr. Van Brunt, of Kansas City; Mr. Jenney, of Chicago; Mr. Hornblower, of Washington; Mrs. F. Fuller, of Chicago, and Mr. Totten, of Washington. M. Alfred Normand presided over the congress, and M. Pupinel acted as secretary. After discussing the subject of Artistic Ownership of Works of Architecture, the congress adopted the following resolutions:

"That the same protection should be given works of architecture as to those of painting, sculpture and other works of design.

"Considering the works of architecture to include the plans, sections, elevations, details (exterior and interior), decorative, and other details in general constituting the works of the architect, of which the constructed edifice is only the reproduction.

"Considering the works of architecture to have the same right to protection by law as painting or sculpture . . . when original or individual."

Papers were read on the subject of Architectural Instruction, while the matter of the Title of Architect in Different Countries brought out an interesting discussion, in which it was shown that although legislation on this subject was pending in many States and countries, it was only in Portugal and Illinois that a license was necessary for a practising architect. A resolution on this subject was passed by the congress, and read as follows:

"That the various governments shall take measures to protect and cause to be respected the title of architect; reserving it in the future, without retroactive effect, for architects provided with a certificate, diploma or license (*Brevet de Capacité*), forbidding others to employ this title, but placing it within the reach of all by the diffusion of architectural instruction."

Cheap Habitations in All Countries, and the Preservation of Historic Monuments, represented the other topics discussed by the delegates, while the consideration of the Influence of Building Regulations Upon Contemporary Private Architecture was postponed to the next session. The Skeleton Frame Construction, and the Artistic Treatment of the Sky-Scraper, as described by American architects, aroused no small amount of interest. The Sixth International Congress will be held at Madrid in the spring of 1903.

The American Institute of Architects held its thirty-fourth annual convention in Washington, D. C., December 12 to 15, 1900, and a number of important papers and reports were presented. Resolutions were adopted asking Congress to appoint a commission to group artistically the public buildings of Washington, and to provide for the enlargement of the Executive Mansion after the most improved architectural ideas. The following officers were elected for the ensuing year: President, Robert Peabody, of Boston; first vice-president, W. S. Eames, of St. Louis; second vice-president, Frank M. Day, of Philadelphia; secretary and treasurer, Glenn Brown, of Washington, D. C.; and members of the board of directors, John Carrère, of New York; James McLaughlin, of Cincinnati, and R. C. Sturgis, of Boston. The next annual convention of the institute will be held at Buffalo in connection with the Pan-American Exposition. Among the papers presented were: *The Italian Formal Garden*, by A. D. F. Hamlin; *The Grouping of Public Buildings in a Great City*, by C. Howard Walker; *Landscape in Connection with Public Buildings in Washington*, by Frederick Law Olmstead; *Recent Progress in Architectural Design*, Walter Cook, and *The Monumental Grouping of Government Buildings in Washington*, by Edgar Seeler.

Licensing of Architects.—During the year the subject of the licensing of architects has attracted considerable attention, and bills were introduced into the Legislatures of Ohio and New York toward that end. In Ohio the bill was opposed by the Cincinnati chapter of the American Institute of Architects, while in New York a somewhat similar bill had the endorsement of the Architectural League, but did not arouse much enthusiasm on the part of the profession generally.

A bill was introduced in the Senate by Mr. McMillan, providing for the appointment by the President of a commission consisting of two architects and one landscape architect, to consider the subject of the location and grouping of public buildings and monuments to be erected in the District of Columbia, and the development and improvement of the entire park system of the District. This resolution had the endorsement of members of the American Institute of Architects and the Board of



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PAN-AMERICAN EXPOSITION, PLATE 11. PAN-AMERICAN EXPOSITION BUILDINGS.—1. The Stadium. 2. The Temple of Music.

Trade and Business Men's Association of Washington, and provided for the appropriation of a sum sufficient to cover the expenses of such a commission.

The attention of architects and the public generally was called during the year to propositions to enlarge the present White House or Executive Mansion at Washington. The scheme in its present form was first proposed, so it is said, by the late wife of ex-President Harrison, who made certain suggestions which were incorporated in a series of designs prepared by Frederic D. Owen, an architect of Washington. These plans, which were drawn during the year by Colonel Theodore A. Bingham, government engineer in charge of the Executive Mansion, called for two wings at right angles to and connected with the present structure by curved corridors with colonnades. This plan, however, did not meet with favor from the profession, and a vigorous protest against alterations and additions to the White House being made without the examination and advice of an expert commission of architects, landscape architects, and sculptors, was presented to Congress by the leading architectural and fine arts organizations of the United States.

Pan-American Exposition.—During the year the plans for a number of important new buildings were illustrated in the various journals, and shown at the exhibitions. Of especial interest were the designs for the Pan-American Exposition of 1901 at Buffalo, which will occupy a space of about 350 acres, adjoining and including Delaware Park. The general scheme was placed in charge of Carrère & Hastings, architects; Karl Bitter, sculptor, and C. Y. Turner, colorist. Mr. Carrère's plan for the treatment of the grounds and the location of the buildings being adopted. To different firms of architects were allotted the preparation of designs for the various buildings, and the complete list is as follows: Liberal Arts and Agriculture, Shepley, Rutan & Coolidge, of Boston; Machinery and Transportation and Electricity, Green & Wicks, of Buffalo; Electric Tower, Howard, Cauldwell & Morgan, of New York; Stadium, Administration, Restaurant, Station and Cloister, Babb, Cook & Willard, of New York; Horticulture, Forestry and Graphic Arts, Peabody & Stearns, of Boston; Temple of Music, Esenwein & Johnson, of Buffalo; Mines, Ethnology, and three entrances, George Cary, of Buffalo; landscape plan, bridge, south approach, and all formal landscape work except the Entrance Court, Carrère & Hastings, of New York. The Machinery and Transportation Building is designed in the Spanish Renaissance style, and is in the form of a hollow square with court in the centre, resembling the mission buildings of Mexico and California. The walls are of cement, of yellowish-white color, the roof of red tiles, and there are numerous towers, pavilions and entrances. The buildings for Horticulture, Graphic Arts, and Forestry are connected by arcades, forming together a semicircular court, and are extensively decorated. The Plaza resembles somewhat the Spanish style of architecture, and contains a terrace surrounding a sunken garden with band stand, being flanked at its northern end by the railway station, which is masked by a colonnade. The Stadium is to be an important feature of the exhibition, and is said to resemble a similar structure erected a few years ago at Athens. The Electricity Building is a long and low structure, with a double-towered entrance at the centre, and pavilions at each corner. The Service Building, one of the first to be erected, is in the style of the Spanish Renaissance, somewhat freely treated, and reminds one of a Californian or Mexican mission or church. The most noteworthy of all the various buildings is the large electric tower, which is on the south side of the Plaza. The color work, which is an interesting and striking feature, is in charge of Charles Y. Turner, who, taking the designs of the architects, is responsible only to John M. Carrère, the chairman of the Board of Architects. The roofs of the main buildings are to be of warm reds, harmonizing with the colors of the different buildings, each of which will show elaborate decoration in rich colors. The walls of the buildings will be such colors as warm buff, light yellow, drab, or gray. The Electric Tower is the climax in the color scheme, and will be ivory white, with delicate coloring in its recessed parts, while in the open-work panels of the main shaft there will be light green and blue and a small amount of gold. Higher up in the columned stories, yellow and blue shades of greater intensity will be used, and the ornamental work of the small pavilions at the base will be similarly treated. The outcome of the color scheme is awaited with interest, as architects are not entirely satisfied with the effects obtained at the Paris Exposition. Whether the treatment will prove artistic or not, it will, at least, give a brilliant and gorgeous appearance to the exposition. The plan has been to have all the buildings designed somewhat freely in the style of the Renaissance, inasmuch as this was the type used in the construction of so many buildings in Mexico and South America. Long arcades and towers, instead of columns, are used, and the sculpture and decoration will be employed as component parts in the whole scheme, rather than as adjuncts.

The plans for the new buildings of the United States Naval Academy at Annapolis were on exhibition during the winter, and were favorably criticised. The architect is Ernest Flagg, and he has prepared a scheme involving the construction of an entirely

new set of buildings, on the most modern and improved lines, taking into careful consideration the especial needs of the academy. The plan calls for the demolition of all the present buildings, with the exception of the Governor's House and of Old Fort Severn, both of which possess historic interest, and the erection of cadets' quarters, armory, boat-house, chapel, academic building, a steam-engineering building, a building for physics and chemistry, and a power plant and general storage warehouse. The whole work is estimated to cost about \$10,000,000, and will provide for buildings located on three sides of the campus, whose fourth side will be formed by the basin. The cadets' quarters will face the parade ground, and will be flanked at the ends by the boat-house and the armory. A portion of these buildings are now in course of construction.

It is unofficially suggested at Cornell University to found a college of fine arts, to be housed in a building costing \$3,000,000, and requiring for its support an endowment fund of \$1,500,000. The scheme has been prepared by Professor John B. Van Pelt, of the College of Architecture, and the school is to be modelled very closely on the lines of the *École des Beaux-Arts* in Paris, uniting in one institution schools of painting, sculpture, and architecture. The intention is to have only a limited number of students, by means of severe entrance examinations at first, and then by the admission only of winners of competitions. It is proposed to accommodate 200 architects, 150 students in painting, and 100 sculptors. The plan is, however, only being discussed, and there is no immediate prospect of the necessary funds and endowment being provided.

Tenement House Competition.—Early in 1900 the Tenement House Committee of the Charity Organization Society of New York City held a competition and awarded prizes for the best plans for model tenement houses by architects. The competition not only attracted attention from architects, but from the public generally, as the plans were placed on free exhibition. The jury of award consisted of I. N. Phelps Stokes, chairman; Dr. E. R. L. Gould, president of the City and Suburban Homes Company; W. Bayard Cutting, president of the Improved Dwellings Association; Mrs. R. C. Lincoln, W. R. Mead, architect, and Miss Lillian D. Ward, of the Nurses' Settlement. The first prize was awarded to R. Thomas Short; second, to Israels & Harder, and the third place in the competition, to which two prizes equal to the original were subsequently added, was awarded to Cowell & Smith, Joseph Wolf, and Israels & Harder. A number of other plans were highly commended by the committee of award, and it was considered that the designs submitted were by far the best ever brought out in a competition where so many important considerations, such as sanitary conditions, economy of space and material, and the standpoint of the investor, were involved.

The prizes of the Municipal Art Society, New York, for the best designs for a public refuge and transfer station, to be used by the Metropolitan Traction Company, were awarded early in the year, thirty-five designs being submitted in the competition. The first prize was for a structure of substantial stone work, designed by G. Kelhaim and James Pickles, while second and third prizes were awarded to Lewis H. Boynton and T. Blondel, Jr., respectively. The plans were on exhibition at the National Arts Club, and showed a great variety of design.

The competition for the Lady Chapel of St. Patrick's Cathedral in New York City brought out fourteen designs, most of which were of high merit. The award was made to Charles T. Mathews, of New York City. The new chapel will be erected on the Madison Avenue side of the cathedral, directly in the rear of and adjoining the present structure.

Architecture in England.—A competition was held in England to decide on the best designs for a large building at Liverpool for the Mersey Docks and Harbor Board, and the first premium was awarded to Messrs. Briggs, Wolstenholme, Hobbs & Thornely. Their plans provide for a building of the late English Renaissance style, with two towers flanking the main entrance. The building is to cost about a million and a quarter dollars, and is to be constructed of stone, with roof of green Westmoreland slates. Another important competition was held to select a design for the New Sessions House, Old Bailey, London, which is to be erected on the site of Newgate Prison. The first place was awarded to E. W. Mountford, F.R.I., B.A. Of even greater interest was a limited competition, held under the auspices of the London County Council, where eight of the most prominent architects of London were invited to submit plans for a block which should contain the central offices of the London County Council. The problem involved the treatment of a crescent-shaped space formed where the new street from Holborn meets the Strand. The new buildings were to be from 70 to 80 feet in height, and the general conditions called for a "Palladian" character in the designs. This stipulation, however, had but slight effect in the design, as all are said to be marked with strong individuality. Mr. Norman Shaw, R.A., is advising the council, and a report has been prepared, in which three of the designs are particularly commended. Somerset House and the

Church of St. Mary-le-Strand stand in proximity to the proposed block, and naturally exert an important influence on the plans. Whether any of the plans submitted will be used, either as a whole or in part, cannot be told at present, since much land in addition to that owned by the council must be first secured and a number of buildings torn down. The plans prepared for the competition, however, are considered among the best, both in design and draughtsmanship, that have ever been exhibited in London.

ARO LIGHTS. See PHYSICS.

ARCTIC EXPLORATION. In 1900 polar explorers made a nearer approach to both the North and the South Pole than had ever been made before, the new record in the north being made by Captain Cagni, of the Abruzzi expedition, and in the south by Mr. Borchgrevink. (For an account of the latter's expedition see the article ANTARCTIC EXPLORATION.) Of the Arctic expeditions in the far north at the beginning of 1900 those of Lieutenant Peary and Captain Sverdrup had not returned at the close of the year. The Abruzzi expedition returned and also a member of the Stein party, which in the summer of 1899 had been set ashore by the *Diana* at Cape Sabine, Ellesmere Land. During the year exploring and scientific work was accomplished by Lieutenant Amstrup, Dr. Nansen, and a Russo-Swedish geodetic commission, while a new expedition, which will probably be out for two years, started under Baron Toll, and several other expeditions were projected or proposed for 1901. More detailed treatment of these topics may be found in the following paragraphs. Mention, however, may first be made of S. A. Andrée, the Swede who with two companions left Dane's Island, Spitzbergen, in a balloon on July 11, 1897, with the hope of drifting across the Pole. In September, 1900, two messages—the one in a buoy, the other in a bottle—purporting to be from him, were picked up off the coast of Norway. They were dated only a few days after he left Dane's Island, and are in no way helpful in determining the result of the voyage. No longer, it seems, is there any doubt that the three voyagers, Andrée, Strindberg, and Fraenkel, who undertook a venture the daring of which no explorer has ever surpassed, perished within a few days or weeks after they first rose over the icy seas of the north.

The Abruzzi Expedition.—The expedition of the Duke of the Abruzzi (*q.v.*), which sailed from Christiania, Sweden, on the *Stella Polare* June 12, 1899, returned to Tromsø, Norway, September 6, 1900, having attained the latitude of $86^{\circ} 33' 19''$, or about 21 miles above that reached by Dr. Nansen on April 7, 1895. After leaving Christiania the *Stella Polare*, which is modelled after Nansen's *Fram*, but is smaller and less stockily built, proceeded to Franz Josef Land, carrying 350 tons of coal and 250 tons of provisions, equipment, etc. On August 9, 1899, in the British Channel, latitude $80^{\circ} 20'$, the party met the *Capella* on its return voyage with the expedition of Mr. Walter Wellman. The *Stella Polare* made her way through the British Channel to Table Bay, Rudolf Land, not far from the 82d parallel; here the vessel, being forced upon the land by the ice, was badly damaged and was held fast for eleven months. A tent was set up, in which the party wintered. The duke's plan to reach the Pole was quite different from that of Dr. Nansen, who attempted the drifting method with the *Fram* in the Siberian Polar Sea. Early in 1900 exploring parties were sent out to establish stores of supplies for the main expedition which was to follow. The first party was successful and returned in a few days. The second never came back; this consisted of a Norwegian and two Italians, who were the only men lost by the expedition. The third party was out twenty-four days. Severe frost bite, resulting in the loss of two fingers, deterred the duke from leading the fourth and last sledge party. This party, under the command of Captain Umberto Cagni, started on the last day of February, but was driven back by violent storms. The second start was made on March 11, after which the party, consisting of four men besides the captain, was out one hundred and four days, returning after attaining on the frozen sea the latitude of $86^{\circ} 33'$ in longitude 65° east. The provisions of the expedition ran low, and for about fifteen days the men were forced to eat their dogs. Of the forty-five dogs that went with the expedition, only seven were brought back. No sign of Peterman Land, hitherto supposed to lie north of Franz Josef Land, was discovered. With difficulty the ship was repaired and left Table Bay when the ice broke up in the summer.

The *Stella Polare* carried twenty sleds, each weighing $48\frac{1}{2}$ pounds and equipped with a canoe and eight aluminium boxes packed with stores. Besides the duke the members of the expedition comprised Captain Cagni, of the Royal Italian Navy; Count Quirini, a naval lieutenant; Dr. Cavalli-Molinelli, two Italian seamen, four Italian mountain guides, ten Norwegian sailors, and one Eskimo, who had charge of one hundred and twenty dogs. This expedition is remarkable in that it was out only a little more than a year. In the latter part of 1900 the duke was making preparations to lead a searching party in the following spring or summer in the hope of finding the three men he had lost.

The three highest records hitherto made are: Abruzzi, 1900, 239.15 statute miles from the Pole; Nansen, 1895, 261 miles; the *Fram*, 1895 (during her drift after Nansen left her), 280.55 miles. The most northern point on land was reached by Lockwood (Greely expedition) in 1882— $83^{\circ} 24'$, or 456.5 miles from the Pole.

The Peary Expedition.—Lieutenant Robert C. Peary sailed on the *Windward* for the far North in July, 1898. When in September of the following year the *Windward*, on its return voyage for supplies, touched at Newfoundland, the following facts concerning the expedition were learned: From August 18, 1898, to August 2, 1899, the ship was frozen in the ice at Allman Bay, Grinnell Land, latitude $79^{\circ} 40' N.$; during this time Peary had explored by sledge and mapped large parts of Ellesmere Land and Grinnell Land, and had charted the hitherto confused coastline to a point beyond Greely Fiord, about $80^{\circ} N.$; he reached Fort Conger, at Lady Franklin Bay, $81^{\circ} 44' N.$, and pushed on to Cape Beechey, near the 82d parallel, the most northerly point attained. On one of these journeys Peary was severely frostbitten and was compelled to return to the *Windward*; no attempt was made to push northward in the summer of 1899, and winter quarters were established at Etah on the Greenland side of Smith Sound. After the return of the *Windward* in September, 1899, nothing was heard of Peary until November, 1900. On July 20 of that year Peary's wife and daughter had sailed from Sydney, Cape Breton Island, on board the *Windward*, to meet him in the North, and up to the end of the year no news had come from the ship after it touched at Disco Island on August 20. When in November the friends of the explorer were experiencing some anxiety for his safety, letters from him were brought by a returning member of the Stein expedition, Dr. Leopold Kahn, who had been landed at Dundee, Scotland, by a whaler sailing from Davis Strait. One of these letters was written from Cape D'Urville, Grinnell Land, March 12, 1900, and the other from Fort Conger, March 31. From them it appeared that the winter of 1899-1900 had been passed comfortably at Etah, and that Peary had regained his health, which had suffered in the previous year. On March 4, Peary, with a party and dogs, set out from Etah and reached Fort Conger on the 28th of the month. He was then intending, with Mr. Mott and a few of the best Eskimos, to press northward as far as possible and then return and meet the *Windward*, so as to reach the United States in the summer or fall of 1900. In November, however, it was generally believed that Peary would pass the winter of 1900-01 at Fort Conger, and that his "dash for the Pole" had been postponed until the spring of the latter year.

The Sverdrup Expedition.—Captain Otto Sverdrup sailed from Christiania June 24, 1898, in command of an expedition aboard the *Fram*, the ship formerly used by Professor Nansen. The party passed the winter of 1898-99 near Cape Sabine, Ellesmere Land, which is separated from the western shore of North Greenland by Kane Basin. Parts of Ellesmere Land were explored and mapped, and Sverdrup planned, it was said, to explore the region about Jones Sound, where the *Fram* probably passed the winter of 1899-1900. It is known that Sverdrup's original purpose was to push through Kane Basin, thence along the northern shore of Greenland, and make his southward voyage off the east coast of that island. Evidently this had not been accomplished in 1900, since in the summer of that year Professor Kolthoff, of Upsala, visited east Greenland and found untouched the store of provisions left for Sverdrup on Pendulum Island by Professor Nathorst in his 1899 expedition.

The Amdrup Expedition.—A Danish scientific expedition commanded by Lieutenant Amdrup sailed for East Greenland from Copenhagen in the *Antarctic* on June 14, 1900, and on July 18 landed at Cape Dalton in the latitude of $69^{\circ} 28'$. For three weeks the party explored the region, mapping it as far as Scoresby Sound. The party also mapped a stretch, hitherto unknown, which extends southward for about 150 miles from Cape Dalton to Aggas Island, $67^{\circ} 22'$, where the surveys met those running north from Angmagsalik, $65^{\circ} 45'$, and completed by Amdrup in 1899. The expedition effected several landings from the *Antarctic* between Scoresby Sound and King Oscar's Fiord, and after touching shore at the relatively high latitude of $74^{\circ} 30'$ sailed from Greenland on September 1. Iceland was reached on the 5th, and two days later the *Antarctic* sailed again for the Greenland coast, Angmagsalik being the objective point. Lieutenant Amdrup soon afterward returned to Copenhagen, arriving there on October 4. The party secured valuable collections of fauna and flora.

Nansen.—In the summer of 1900 Dr. Fridtjof Nansen was engaged with Dr. Johan Hjort on the *Michael Sars*—built and equipped for Arctic cruising by the Norwegian government—in taking hydrographic observations in an uncharted part of the ocean between Iceland and Spitzbergen, and in studying the habits and migrations of the cod, particularly between Iceland and the Shetland Islands.

Other Parties.—Professor Kolthoff, mentioned above, voyaged to East Greenland and returned from Franz Josef Fiord with several musk oxen, which he hoped to

acclimatize in northern Sweden. Several musk oxen also were brought to Norway by Captain Naerö, in command of a Norwegian whaler, which reached the east coast of Greenland in the high latitude of $75^{\circ} 30'$.

Two German Arctic expeditions were led by Herr Bade and Herr Bauendahl. During the summer of 1900 a combined Russo-Swedish geodetic commission, sent out especially to make an accurate measurement of an arc of a meridian in Spitzbergen did a considerable amount of work, but on account of unfavorable ice conditions returned without completing the task. The reported discovery of valuable coal seams in Spitzbergen may render important the question of the political ownership of that archipelago. The claims of no nation have yet been recognized.

The Toll Expedition.—An expedition, consisting of six scientists and twelve sailors, under the leadership of Baron Toll, who discovered Sannikoff Land in 1886, left St. Petersburg in June, 1900, on the steamer *Aurora*. Baron Toll's plan is to traverse the Arctic Ocean north of Siberia, and passing through Bering Strait reach the Russian port, Vladivostok. After touching at Tromsø, Norway, and Russia's new Lapland port, Catherine Harbor, the party expected to establish winter quarters somewhere on the Taimur Peninsula, which extends far into the Siberian Arctic. They intended to explore the neighboring territory during the winter of 1900-01, and when the ice breaks up in the midsummer of 1901 hope to proceed to the still unexplored Sannikoff Land, and there continue the work of discovery. Later the *Aurora* will endeavor to reach Bennett and De Long islands, and during the winter of 1901-02 efforts will be made to determine whether the group extends to the Pole. When navigation becomes possible in 1902 the party will put for Vladivostok, reaching there in the fall of the year. In October, 1900, a sledging party set out in the hope of meeting Baron Toll's expedition sometime during the winter.

Proposed Expeditions.—The projection of the Ziegler-Baldwin expedition, which it is hoped will reach a point above that of the Duke of the Abruzzi, was announced in the autumn of 1900. It was to be equipped by Mr. William Ziegler, a New York capitalist, and will be led by Mr. E. B. Baldwin, who expected to start for the north some time in 1901. In December Mr. Baldwin was in London consulting scientists and inspecting ships for the expedition. He stated that it had been definitely decided to go by way of Franz Josef Land, as he believed that the Greenland route was sufficiently covered by Lieutenant Peary and Captain Sverdrup. It was announced in December, 1900, that Captain J. E. Bernier, a Canadian explorer, was at that time in London fitting out the ship *Scottish King* for an expedition to the far north in 1901. Captain Bernier expected to pass through Bering Strait and enter the ice-pack not far from Bennett Island, which lies to the northeast of the Lena River delta. This is the region in which the *Jeannette*, under command of General A. W. Greely, was wrecked and the party held in the ice for two years (1882-84). To some extent Captain Bernier will employ Nansen's drifting method, his general course being similar to that of the *Fram*. The prevailing winds come from the east and southeast. It is said that Captain Bernier will take one hundred and twenty reindeer, many dogs, and food supplies for two and one-half years. He expects, however, to be out no more than eighteen months.

It was pointed out in 1899 that the Russian ice-breaker, *Ermak*, might be used advantageously for exploration in the far north, and in 1900 it was announced that the sturdy ship would be put to such a use in 1901, probably starting in the summer with its designer, Vice-Admiral Makaroff of the imperial navy, in command. In December, 1900, the *Ermak* was being fitted out for the expedition at Newcastle, England. Dogs and sledges will be taken, so that if the ship is actually held in the ice a dash for the Pole may be attempted. The *Ermak*, which was built at Walkerton-Tyne for the purpose of keeping open the ice-bound Russian ports, is a quadruple screw steamer, 305 feet long, 71 feet wide, and 42 feet 6 inches deep, having a displacement, with 3000 tons of coal on board, of 8000 tons. As the ship is marvellously strong, its sides being said to have fifteen times the resistance of the ordinary steel vessel, and as it has already made head through solid ice 14 feet thick, the voyage is awaited with considerable expectation.

ARGENTINA, a republic on the Atlantic coast of South America. The capital is Buenos Ayres, a port at the mouth of the river Plata.

Area and Population.—The republic has comprised 14 provinces and 9 territories, the estimated areas of which are 515,815 square miles and 1,319,247 square miles respectively. Early in 1900 it was announced that the government had erected a new territory out of the Puna de Atacama region near the Bolivian frontier, which was awarded to Argentina in 1899 by Mr. William I. Buchanan, arbitrator of the northern Argentine-Chilean boundary dispute. A decision of the question of disputed territory south of the parallel $26^{\circ} 52' 45''$ S., referred to representatives of the British government, had not been reached in 1900. According to the census of

1895, the population of the provinces was 3,851,542 and of the territories 103,369. The number not enumerated was probably about 60,000. The Indian inhabitants number about 30,000. The total population in 1899 was reported at 4,518,593. The estimated number of foreign inhabitants in 1900 was 1,200,000, of which 600,000 were Italian, 238,900 Spanish, 112,900 French, 58,400 Uruguayan, 26,100 English, 24,700 Chilean, 20,600 German, 18,100 Russian, 17,700 Swiss, 17,500 Paraguayan, 15,400 Austrian, 14,700 Brazilian, 8800 Bolivian, 6500 Belgian, 3500 Dutch, 2800 Portuguese, 2000 Swedish, 1700 Danish, 1700 North American. The rate of immigration fluctuates; the number of immigrants, exclusive of those from other South American countries and of passengers from Montevideo, arriving at the port of Buenos Ayres in 1898, was 40,377; in 1899, 84,442, of whom the majority were Italians. About 30 per cent. of the whole settled in the provinces of Buenos Ayres and Santa Fé. The populations of the principal cities, according to the census of 1895, were: Buenos Ayres, 615,226; Rosario, 94,025; Córdoba, 47,609; La Plata, 45,410; Tucumán, 34,300; Mendoza, 28,709; Santa Fé, 24,755; Paraná, 24,261; Salta, 16,600; Corrientes, 16,129; San Juan, 16,410; San Luis, 9826.

Buenos Ayres.—The population of Buenos Ayres, the capital of the republic, in point of numbers is next to Paris among the Latin cities of the world, and is rapidly increasing. The city absorbs a good part of the immigration, while the population in the other parts of the country, excepting the city of Rosario, increases slowly or actually remains stationary. The estimated number of inhabitants at the end of 1899 was 795,323, the increase during the year being 29,579. The city marks the nearest approach in South America to the urban civilization of Europe. In foreign commerce the city is credited with 54 per cent. of exports and 87 per cent. of the imports of the entire republic. It has 15 theatres or other places of amusement; its numerous tram-car lines, some of which are electric, carried 116,447,982 passengers during 1899; and it is lighted by 13,150 gas jets, 8214 lamps, and 1252 arc lights. The drainage system introduced in 1890 seems to have resulted in a decrease of the death rate per 1000 inhabitants from 30 in that year to 17.7 in 1898 and 17.1 in 1899. In the last-named year the number of houses with drainage was 24,900. Rapid improvement is being made in the length and quality of the city pavements, the paved streets within the city limits aggregating in 1900 about 5,000,000 square metres against a total street area of 11,500,000 square metres.

Government.—By the provisions of the constitution, which is similar to that of the United States, the chief executive authority is vested in a president, who is chosen by an electoral college for a term of six years. The president, who is not eligible to re-election, is commander-in-chief of the army, has appointive power to all military, judicial, and civil offices, and has the right of presentation to bishoprics. In 1900 the president was Señor Julio A. Roca, who took office October 12, 1898. Appointed by the president is a ministry of eight members who, with the chief executive, are responsible to congress. The legislative authority devolves upon a congress of two houses, the senate and the house of deputies, members of which number respectively 30 and 133. The provinces have full autonomy in their own affairs, including the incurrence of debt. They elect their own legislatures and governors. The federal judiciary consists of a supreme court of five judges and an attorney-general, and of various inferior courts. The provinces have their own judicial systems. Though trial by jury in criminal cases is provided by the constitution, this is seldom, if ever, practised.

Army and Navy.—The regular army was reported in 1900 to consist of 1463 officers and nearly 13,000 men, while the total effective army numbers over 29,000. There is also a national guard of some 467,000 men, the majority of whom receive some military training each year. In the spring of 1900 it was announced that the government was increasing its stock of war materials.

With the exception of Chile and Brazil, Argentina has by far the strongest of the Latin-American navies. The Argentine navy comprises 5 armored cruisers, 3 high-speed, coast-defence cruisers, 4 coast-defence armouredclads, 7 smaller though modern gunboats and cruisers, 12 first-class and 10 second-class torpedo boats, 4 torpedo-boat destroyers, and a number of older craft. Of the armored cruisers, the *General G. G. G. G.*, *San Martín*, *General Belgrano*, and *Pucyrredon* were bought in Italy with the consent of the Italian government; they are fine modern vessels, having a length of 328 feet and a displacement of over 6800 tons. Besides a battery and a battalion of marines, the personnel of the navy includes 656 officers and 7760 seamen.

Finance.—The most important source of public revenue is import duties; other sources of revenue are the spirit and tobacco taxes, other internal taxes, export duties, stamps, railways, and public works. The largest item of expenditure is interest on the national debt. Revenue and expenditure in pesos have been reported as follows (the peso being worth 96.5 cents and the paper peso about 43 cents):

	Revenue.		Expenditure.	
	Gold.	Paper.	Gold.	Paper.
1897.....	30,466,322	61,035,853	29,214,763	93,427,502
1898.....	33,878,266	49,744,214	20,931,551	93,072,745
1899.....	45,676,188	61,419,990	21,481,378	96,068,365

According to the president's message to congress, May 1, 1900, the revenue for 1899 was greater than the estimate, while the expenditure was less. Of the revenue, 28,388,-261 pesos gold were import duties. For 1900 the estimated revenue was 45,981,735 pesos gold and 67,122,000 pesos paper; and the estimated expenditure, 32,946,813 pesos gold and 95,447,513 pesos paper. In the message mentioned above the president stated that the national external debt amounted to 300,203,982 pesos gold; and the internal debt, 6,375,000 pesos gold and 98,929,000 pesos paper. In a message to congress, July 17, 1900, the president stated that the public debt—the internal and external consolidated debts and the debt for armaments and improvements—amounted to 418,-379,118 pesos gold. Each province and municipality has its own budget. A law providing for the unification of the national and provincial foreign debts was enacted in 1896, whereby provincial creditors are required to exchange their provincial bonds for national bonds of a smaller face value. Accordingly, during 1899 the foreign debts of the provinces of Santa Fé, Córdoba, Corrientes, Tucumán, Catamarca, and San Luis were settled; and in June, 1900, an arrangement was made whereby the government engaged to pay off the Mendoza foreign debt and overdue service, amounting to \$6,521,000, by a four per cent. bond issue of \$3,552,000. The paper currency in circulation at the end of 1899 was reported to be 295,149,731 pesos. Early in 1900 it was announced that the congress had approved the law, promulgated in the preceding November, providing for the establishment of the gold monetary standard and the conversion of the paper circulation into gold pesos at the rate of 44 centavos gold per peso paper. Provision was made for a metallic circulation fund. For public finance the year 1900 seems to have been a very satisfactory one.

Production and Industries.—Economic prospects in 1900 were very favorable. For years the leading industry has been sheep and cattle raising; second in importance is agriculture, for the development of which efforts are being constantly made, but less than 7 per cent. of the total tillable area is under cultivation. The chief crop is wheat, Argentina being one of the principal producers of that cereal in the world; other leading products are corn, sugar, flax, and the grape. Santa Fé and Buenos Ayres are the two greatest wheat-producing provinces, but the wheat area is gradually increasing, chiefly toward the south, where there is greater security from the locust pest than in the northern districts. Other provinces important for their cereal products are Córdoba and Entre Rios. The wheat crop in 1899 was estimated to be over 2,200,000 tons (metric) and the export was 1,791,668 tons; the production for the year ending July, 1900, was about 2,756,000 tons, of which about 1,886,000 tons were available for export. This last amount was two and two-thirds times as great as the export of 1892. Corn production in 1899 amounted to about 2,800,000 tons, of which the export was some 1,122,720 tons. In the export of both these cereals there is an increasing rivalry between Argentina and the United States. Wine has become a staple product in the provinces of Mendoza and San Juan. Of the 250,-000,000 litres of wine annually consumed in Argentina considerably more than 100,000,000 are now produced there. In 1899 the estimated sugar output was 90,000 tons, of which all but about 10,000 tons was produced in the province of Tucumán. The flax crop of 1900 amounted to over 170,000 tons. The Plata regions of Argentina and Uruguay are among the most important wool-producing districts of the world; in 1899 the estimated number of sheep in Argentina was 85,000,000 and in Uruguay 17,000,000, the total showing a gain of over 20,000,000 since 1890. In addition there are many horses and goats and over 20,000,000 cattle. The wool clip in 1899 amounted to about 225,000 tons, some 21,000 tons less than that of the previous year, but on account of advanced prices the aggregate value was greater. Late in 1900 the inactivity in the wool market caused much anxiety among Argentine flock owners. Early in the summer of 1900 considerable alarm was occasioned by the prevalence of the foot-and-mouth disease among cattle and other domestic animals; later the malady disappeared, but not before many countries had established a quarantine against Argentine cattle. Mining has made little progress. Lignite occurs in several provinces; in a small way petroleum is worked in Mendoza, and borax, borate of soda, and borate of lime in the provinces of Salta, Jujuy, and Atacama, on the Chilean frontier. Quebracho, or iron-wood, which is used for railroad sleepers, is found in the northern districts, and promises to be a valuable export. During 1900 large quantities of grain and hay and many horses were purchased in Argentina by the British government for use in the South African War. It appeared that the Argentine horses in general were inefficient for war purposes.

In the provinces of Buenos Ayres, Entre Rios, and Santa Fé, a Jewish colonization society has acquired 318,000 acres, on which over 7000 persons have settled. A Welsh colony, with a population of 3800, has settled in the Chubut valley in eastern Patagonia; in July, 1899, a flood did great damage to property and caused much distress in the colony. In the fall of 1900 the government decided to grant a concession of 200 square leagues of land in the territory of Formosa, adjoining the Pilcomayo River, for the establishment of an agricultural colony of 20,000 Japanese, whom the concessionaire agreed to introduce.

The government lands in Santa Cruz amount to 24,950,000 hectares; Chubut, 22,546,000; Rio Negro, 15,087,000; Chaco, 13,025,000; Formosa, 8,676,000; Pampa Central, 3,125,000; Tierra del Fuego, 1,887,000; Misiones, 792,000; Neuquen, 6174.

Commerce.—The principal exports of Argentina are the produce of the flocks and herds and agricultural products, notably wheat and corn; the chief imports are textiles and wearing apparel, iron, iron and steel implements, machinery, and glass and earthenware. The values, in gold pesos, of exports and imports, exclusive of coin and bullion, have been:

	1897.	1898.	1899.
Exports, dutiable.....	61,855,000	71,472,647	100,868,723
“ free.....	39,314,299	62,356,811	84,049,108
Total.....	101,169,299	133,829,458	184,917,831
Imports, dutiable.....	85,699,748	93,988,545	102,080,738
“ free.....	12,589,200	13,440,355	14,769,933
Total.....	98,288,948	107,428,900	116,850,671

The increase in exports in 1899 was chiefly live stock and live-stock products, the value of which amounted to 115,549,906 pesos. Exports from Argentina by countries have been reported in gold pesos as follows:

	1898.	1899.		1898.	1899.
France	29,981,056	41,446,747	United States.....	5,874,295	7,667,523
Germany	20,286,338	29,433,663	Brazil	7,916,301	7,041,668
Belgium	13,949,751	24,478,370	Italy	5,256,054	4,926,612
Great Britain... ..	19,205,366	21,721,591	Uruguay	3,683,275	3,481,348

The remainder went in smaller amounts to various other countries. Importations to Argentina by countries have been reported in gold pesos as follows:

	1898.	1899.		1898.	1899.
Great Britain... ..	39,012,600	43,671,421	France	10,596,725	10,979,690
United States... ..	11,129,065	15,466,846	Belgium	9,444,981	9,410,479
Italy	13,695,241	13,780,072	Brazil	5,012,115	4,806,116
Germany	12,571,116	12,979,937	Spain	3,315,470	3,197,882

The remainder came in smaller amounts from various other countries. Of the exports about two-thirds and of the imports over four-fifths pass through the port of Buenos Ayres.

The leading exports reported for 1899 include the following (the word ton signifying the metric ton of 2204.6 pounds): Wheat, 1,791,668 tons (65,831,854 bushels); wheat flour and bran, 118,230 tons; corn, 1,122,720 tons (42,663,360 bushels); wool, 231,238 tons (509,788,080 pounds); linseed, 216,426 tons; hay, 44,258 tons; sheepskins, 32,540 tons; tallow, 14,259 tons; ox-hides, 3,211,757; frozen wethers, 1,959,564. The principal imports to Argentina in 1899 were reported as follows: Textiles, 39,545,651 pesos (gold); iron and iron goods, 18,077,451; glassware, crockery, etc., 10,480,150; liquors, 7,116,540; lumber, 7,466,818; oils, 3,873,376; other important imports were metal and leather manufactures, paper, and paints.

Shipping.—Entrances of vessels engaged in foreign trade at Argentine ports numbered in 1897: Steam, 6827 vessels, aggregating 5,522,973 tons; sail, 3536, aggregating 541,091 tons; total, 10,363 vessels of 6,064,064 tons. In 1898: Steam, 6866 vessels of 5,928,765 tons; sail, 3332, of 626,363 tons; total, 10,198, aggregating 6,555,128 tons. In 1899 the entrances from the United States were: Steam, 65 vessels of 110,516 tons; sail, 193 of 170,365 tons; total, 258 of 280,881 tons. Clearances for the United States were: Steam, 24 vessels of 23,384 tons; sail, 50 of 35,495 tons; total, 64 of 58,879 tons. The small return tonnage from Argentina to the United States is largely due to the American tariff on wool. Most of the steamers clearing from New York carry Argentine grain and wool cargoes to Europe before

returning. In 1898 the Argentine merchant marine comprised 86 steam and 157 sail vessels.

Communications.—In the latter part of 1899 the railroad mileage reported for Argentina was 15,884 kilometres (9870 miles), giving that country the seventh position in the world, Austria-Hungary being sixth and Brazil eighth. In 1900 several new roads were projected or under construction. The five provinces having the greatest aggregate length of line in 1898 were Buenos Ayres, 4872 kilometres; Santa Fé, 3400; Córdoba, 1954; Santiago del Estero, 1068; Entre Rios, 718. Over three-fifths of the lines are broad gauge, but almost all have only single track. Some lines are under federal control, some under provincial, and some under private. At the end of that year the reported amount of capital invested in Argentine railways was 523,517,000 pesos gold, on which the average rate of interest yielded was 2.7 per cent. Of this capital about 475,000,000 pesos is foreign. The gross receipts—about twice the net earnings—of the railways in the fiscal years 1899 and 1900 were 27,810,000 pesos gold and 34,253,000 pesos gold respectively. Late in 1900 the government decided to offer for sale the Transandean Railway on the basis of £1,200,000 (\$5,839,200), the proceeds to be credited to the conversion fund. In 1896 there were 25,345 miles of telegraph line. The telegraph and post-offices together number about 1660.

Religion and Education.—The state religion is Roman Catholic, but other forms of faith are tolerated. Primary instruction, which is free, secular, and nominally compulsory, is under the general supervision of a national council in Buenos Ayres and the nine territories, and in other parts of the republic under the control of the provincial governments. In 1898 there were over 4100 primary schools, with an enrolment of over 404,000 pupils. For secondary instruction, which is controlled by federal authorities, there are 16 lycæums with over 4000 students. In addition there are national universities at Buenos Ayres and Córdoba, and provincial universities at Santa Fé, La Plata, and Paraná, with a total of 2500 students. There are a naval and military school, a school of mines, of agriculture, national observatories at La Plata and Córdoba, and museums at La Plata and Buenos Ayres. In 1900 the reported number of periodicals and newspapers published was 177, of which 49 were in Buenos Ayres.

Revolutionary Outbreak.—A revolutionary outbreak occurred in Entre Rios in March, 1900, three towns being occupied by the insurgents, who, however, laid down their arms upon the arrival of government troops. See SOUTH AMERICA.

ARGYLL, Eighth Duke of, GEORGE DOUGLAS CAMPBELL, K.T., K.G., distinguished British statesman and writer, died at Inverary Castle, Argyllshire, April 24, 1900. Descended from a family that for several centuries has been prominent in Scotch history, he was born April 30, 1823, at Ardincaple Castle, Dumbartonshire, Scotland. He was educated privately, and at an early age entered the public life of his time. He was only 19 when—his title being then Marquis of Lorne—he became involved in the struggle finally ending in the disruption of the Scottish Church, and published *A Letter to the Peers by a Peer's Son*, a pamphlet that opposed the sympathies of his family and advocated the freedom of the Scotch Presbyterian Church. He published a historical vindication of the Presbyterian system, entitled *Presbytery Examined*, in 1848. In the previous year he had succeeded his father in the Scottish dukedom. For many years he sat in the House of Lords as an English baron, with the title of Lord Sundridge; it was not until 1892 that he became a duke of the United Kingdom. Entering the upper house in 1847, he soon became prominent in the Whig party, but always maintained an independence of position that sometimes set him at variance with his party leaders. Without any probationary service he entered the coalition ministry of Lord Aberdeen, as lord privy seal, in 1853, and continued in office in Lord Palmerston's cabinet until late in 1855, when he resigned to become postmaster-general. He retained this position until the defeat of Lord Derby's government in 1859, when he again became lord privy seal in the second administration of Lord Palmerston, and he held this office until the Reform question brought about the fall of Lord John Russell's cabinet in 1866. In Gladstone's first administration, 1868-74, the duke was secretary of state for India, and when the former again came into power in 1880 he resumed his old position of lord privy seal. He resigned, however, in the spring of 1881, when the cabinet adopted the Irish land bill, for he was a firm opponent of the Liberal Irish policy. This was his last state office. The high ideal of public duty that characterized the duke made him steadfast in his convictions on matters of state; but at the same time, and perhaps for this reason, he lacked flexibility and humor, and so, while he was always an impressive speaker, his tendency to preach and assume a high air of infallibility seriously militated against the effective power of his oratory.

He wrote extensively on many subjects, including physical science, economics, metaphysics, theology, literary criticism, and historical research. Besides his published volumes he wrote a large number of articles that appeared in newspapers and magazines and have never been collected. His most important scientific works are

The Reign of Law, 1866, and its continuation, *The Unity of Nature*, 1884, in which, as in *Primeval Man*, 1869, he attacks some of the theories of such pre-eminent scientists as Darwin, Spencer, Lyell, Tyndall, and Huxley. He seemed to possess "too little of the capacity for grasping a great, though, it may be, as yet an imperfect, generalization;" nevertheless, his position was sufficiently advanced to bring upon him the disapproval of firmly conservative scientific thinkers. In economics he both disagreed with some of the tenets of the old school—such, for example, as Ricardo's theory of rent—and opposed all tendencies that make for any kind of socialism. Besides the works already mentioned, the duke wrote: *A History of the Antiquities of Iona* (1871); *The Eastern Question* (1879); *Scotland as it Was and as it Is* (1887); *The New British Constitution* (1888); *The Highland Nurse* (1889); *Unseen Foundations of Society* (1893); *Irish Nationalism* (1893); *The Burdens of Belief* (poems, 1894); *Philosophy of Belief* (1896); *What is Science?* (1898); *Organic Evolution Cross-examined* (1898). From 1851 to the time of his death the duke was chancellor of the University of St. Andrews. He was a Knight of the Thistle, a Knight of the Garter, lord rector of the University of Glasgow in 1854, president of the Royal Society of Edinburgh in 1861, and a trustee of the British Museum. He was a great landholder, possessing about 170,000 acres. His eldest son, the Marquis of Lorne, who was formerly governor-general of Canada, and who is the husband of Princess Louise, the fourth daughter of Queen Victoria, succeeded to the title.

ARIZONA, a southwestern Territory of the United States, has an area of 112,920 square miles. The capital is Phoenix. Arizona was organized February 24, 1863.

Agriculture.—The principal crop of Arizona is the variety of forage known as alfalfa. Of this plant from five to eight cuttings a year are to be expected. Other staple crops are wheat, barley, and corn. The production of wheat for the calendar year 1900 was 365,657 bushels, valued at \$288,869. The agricultural interests of the Territory are largely dependent upon the water supply of the Gila and Salt rivers, but notwithstanding the drought continuing through the greater part of the year, the crops for 1900 have on the whole resulted favorably for the farmers and fruit raisers. The development of artesian water has been an important feature of the year's progress in the valley of the Upper Gila, and by means of irrigation from new artesian wells, a considerable area has lately been brought under cultivation. The following shows the shipments of live stock for the year ended June 30, 1900: Cattle, 160,714; horses, 2221; hogs, 5154; and mules, 22. The wool product for 1900 is estimated as follows: Number of sheep, 1,003,942; wool, washed and unwashed, 7,529,565 pounds; wool, scoured, 2,108,278 pounds.

Mineralogy.—The year 1899 was the most prosperous for the mining industry in the history of the Territory. The copper output was greater than ever before, the total production being 125,377,758 pounds. The estimated output of gold for the calendar year 1900 was 169,312 fine ounces, valued at \$3,500,000, and of silver, 4,250,000 fine ounces, valued at \$2,592,500. Quarrying in 1899 yielded small amounts of sandstone and limestone, with a total valuation of \$5128.

Commerce.—In the fiscal year ending June 30, 1900, the imports of merchandise in the customs districts of the Territory were valued at \$1,224,863, a decrease in a year of \$260,368, and the exports were valued at \$1,992,423, an increase of \$474,043. The imports of gold amounted to \$1,260,423, and of silver to \$1,557,929, making the total foreign trade \$6,035,638, an increase in a year of \$26,245.

Railroads.—New railway construction during the year 1899 amounted to 74 miles, giving the Territory a total mileage of 1461.61. The total territorial tax on railroad property was \$4,330,830. A new company, called the Santa Fé & Arizona Southern Railroad Company, has been incorporated to build from Seligman, on the Santa Fé Pacific Railroad, south for a distance of 90 to 100 miles, penetrating the mining districts near the Hillside.

Banks.—On October 31, 1900, there were 5 national banks in operation and 3 in liquidation. The capital stock aggregated \$400,000; circulation, \$213,077; deposits, \$2,061,815, and reserve, \$879,301. Territorial and private banks, June, 1900, numbered 14, and had capital, \$373,550; deposits, \$2,296,908, and resources, \$2,762,474.

Finances.—The assessed valuations of property in 1900 aggregated \$33,782,466, an increase in a year of \$1,272,046. The tax levy was 85 cents per \$100 valuation. The total bonded debt of the Territory, June 30, 1900, including a floating debt of \$124,711, was \$1,127,683. Cash in the treasury available for the redemption of this indebtedness amounted to \$56,833, leaving a net territorial debt of \$1,070,850.

Education.—The total receipts for educational purposes during the school year 1899-1900 were \$421,776; expenditures, \$345,314. In June, 1900, the school population was 20,833; number of pupils enrolled, 16,504; average attendance, 10,177; number of schools, 398; number of teachers, 399. The average length of the school year is 6.25 months. The only high school is located at Phoenix, in Maricopa County. There are two normal schools, one at Tempe, and one at Flagstaff. The University of Arizona, located at Tucson, in Pima County, reports an increased at-

tendance of students in 1899-1900. During the year 2014 books were added to the district school library, making a total of only 8160 books in all the libraries of the Territory.

Population.—Census of 1890, 59,620; census of 1900, 122,212; increase for the decade, 62,592, or 104.9 per cent.

Needs of the Territory.—In his annual report for the year ending June 30, 1900, the governor renewed "with all possible earnestness" the arguments previously urged by him in favor of the admission of Arizona as a State. The principle, he stated, of the admission of Territories rested upon the desire of their inhabitants for self-government, and their ability to maintain an adequate and representative State government. The rapidity with which Arizona had developed from a primitive frontier region to a progressive, enlightened, and law-abiding community, the increase of its population to over 100,000, of its assessed wealth to over \$33,000,000, and of its assessable wealth to \$100,000,000, fully entitled it to recognition as a State. The governor also recommended that the federal lands in Arizona be ceded to the Territory. By leasing or selling these the Territory would be able to raise money sufficient, without creating a bonded indebtedness, to construct "a complete and thorough water-storage and irrigation system. In this connection the governor asked that Congress make liberal appropriation for the construction of storage reservoirs within the Territory, and particularly for the construction of a dam at San Carlos, on the Gila River. By this dam a very large area could be irrigated. Appropriations were also asked for the investigation of sites for artesian wells. In view of the increased mining operations Congress was asked to establish a government assay office and branch mint within the Territory. Among other recommendations made were that a commission be appointed by Congress for ethnological and archaeological research within the Territory, that a fifth judicial district be created, that salaries of federal judges of the Territory be increased, and that "appropriation be made by Congress to pay the governors and secretaries of Territories the salaries allowed them by law."

Legislation.—The last session of the territorial Legislature met in 1899. At that session a commission was appointed to revise the code of the territorial statutes and to present a report thereon to the twenty-first session of the Legislature, which meets on the third Monday of January, 1901. It was stated that the work of the commission would probably be accepted with but few amendments, and that the code as revised by it would, in the main, be enacted into law.

Elections.—The territorial Legislature of 1899 consisted, in the council, of 9 Democrats and 3 Republicans, and in the House of 13 Democrats and 11 Republicans. In 1901 there will be in the council, 8 Democrats and 4 Republicans, and in the House, 19 Democrats and 5 Republicans. The Democratic nominee for delegate to Congress received 8664 votes as against 7664 received by the Republican nominee.

Territorial Officers and National Delegate.—Territorial officers for 1900-01: Executive—governor, N. O. Murphy; secretary, Charles H. Ackers; treasurer, T. W. Pemberton; auditor, G. W. Vickers; adjutant-general, H. P. Robinson; attorney-general, C. A. Ainsworth; superintendent of education, R. L. Long.

Supreme Court: Chief justice, Webster Street; associate justices, Richard E. Sloan, Fletcher M. Doan, George R. Davis; clerk, Lloyd Johnston. The territorial Legislature consists of 27 Democrats and 9 Republicans.

Territorial delegate for 1900 (56th Congress), J. F. Wilson (Dem.), from Prescott; territorial delegate for 1901 (57th Congress), Mark A. Smith (Dem.), from Tucson.

ARKANSAS, a south central State of the United States, has a land area of 53,045 square miles. The capital is Little Rock. Arkansas was organized as a Territory March 2, 1819, and admitted as a State June 15, 1836.

Agriculture.—The following shows the production and value of the principal crops for 1900: Corn, 45,225,947 bushels, \$19,447,157; wheat, 2,689,418 bushels, \$1,748,122; oats, 7,038,665 bushels, \$2,463,533; rye, 19,722 bushels, \$14,200; potatoes, 2,127,816 bushels, \$1,212,855; hay, 228,580 tons, \$2,022,933.

The movement of cotton during the season 1899-1900 aggregated 669,385 bales. Federal officials estimated the area devoted to the cultivation of cotton at the close of 1900 to be 7,899,000 acres, and the yield, 223 pounds of lint cotton per acre. In the *Bulletin* of the National Association of Wool Manufacturers the wool product for 1900 is estimated as follows: Number of sheep, 103,836; wool, washed and unwashed, 441,303 pounds; scoured wool, 264,782 pounds.

Mineralogy.—The coal product for 1899 was 843,554 short tons, valued at \$989,383, a decrease, compared with 1898, of 361,925 tons, with a shortage of \$249,395 in value. The decrease was due not to any falling off in demand, but to strikes in the principal mines. Out of the 22 mines in the State, 11 had men on strike from 30 to 180 days. The 11 mines affected employed 2195 men out of a total of 2313 in the State. The total working time lost by the strikes was 220,105 days, an average of 100 idle days per man, and equal to 61 per cent. of the total working time made, from which it can

be calculated that but for the time lost by strikes, all other conditions being equal, the State would have produced about 1,350,000 tons of coal during 1899. Quarrying yielded four kinds of stone, the values of which were: Limestone, \$71,965; sandstone, \$73,616; granite, \$39,470; and marble, \$3410—in all, \$188,461.

Industries.—In 1900 Arkansas led all the States in the production of yellow pine lumber. Shipments for the eleven months ended December 1, 1900, aggregated 435,696,195 feet, and the total amount cut during the same period was 481,550,435 feet. In 1899 there were 36 cigar factories, which used 33,182 pounds of tobacco, and manufactured 1,493,250 cigars during the calendar year. Grain and fruit distilleries in operation numbered 37, and the amount of fruit brandy produced during the fiscal year ended June 30, 1900, was 24,470 gallons; spirits rectified, 44,179 gallons; distilled spirits gauged, 210,293 gallons; and fermented liquors produced, 11,505 barrels. One new cotton mill, with 5000 spindles, was built in 1900.

Railroads.—The total new railway construction reported for the calendar year 1900 was 62.90 miles, giving the State an aggregate mileage of 3155.67.

Banks.—On October 31, 1900, there were 7 national banks in operation and 7 in liquidation. The active capital aggregated \$1,070,000; circulation, \$330,427; deposits, September 5, 1900, \$3,108,065; and reserve, \$1,003,249. The State banks June 30, 1900, numbered 39, and had capital, \$1,243,509; deposits, \$4,464,013; and resources, \$6,604,264; private banks, 3, with capital, \$25,000; deposits, \$133,878; and resources, \$163,018. Exchanges at the clearing house at Little Rock for the year ended September 30, 1900, aggregated \$24,431,793, as compared with \$18,966,254 in 1899.

National Guard.—The State troops are officially designated the Arkansas State Guard. It comprises 99 cavalry, 140 artillery, and 1630 infantry. The total number liable to military service is 262,000.

Education.—In 1899 the school population was 472,417; enrolment in public schools, 301,387; average daily attendance, 186,177. There were 5350 buildings used as schoolhouses, and the estimated value of public school property was \$2,565,000. The revenue was \$1,329,744; expenditures, \$1,292,463, of which \$1,121,899 was for teachers' and superintendents' salaries. The average expenditure per pupil for the whole school year was \$6.94. There were 53 public high schools, with 118 teachers and 2812 secondary students; 24 private secondary schools, with 75 teachers and 1452 students; 1 public normal school, with 11 teachers and 66 students; and 6 private normal schools, with 31 teachers and 631 students. Seven colleges and universities for men and for both sexes reported 80 professors and instructors, 1407 students, and a total income of \$110,722; and one college for women reported 9 professors and instructors, 100 female students, and a total income of \$8000. The professional schools comprised 1 theological school, with 2 instructors and 24 students; 1 law school, with 15 instructors and 23 students; and 1 medical school, with 13 instructors and 108 students.

Population.—According to the federal census, the population in 1890 was 1,128,179; and in 1900, 1,311,564, an increase for the decade of 183,385, or 16.25 per cent. The largest cities in 1900 were Little Rock, with 38,307 inhabitants; Fort Smith, 11,587; Pine Bluff, 11,496, and Hot Springs, 9973.

Elections.—The vote on the State ticket resulted in a victory for the Democratic nominee for governor, Jefferson Davis, by 88,637 votes, as against 40,701 votes cast for the Republican nominee, H. L. Remmell, and 3641 cast for A. W. Files, the Populist nominee. The vote for governor in 1896 was: D. W. Jones, Democrat, 91,114; H. L. Remmell, Republican, 35,836; A. W. Files, Populist, 13,990. The State Legislature in 1899 consisted, in the Senate, of 32 Democrats, and in the House of 98 Democrats and 2 Republicans. In 1901 the Legislature will consist, in the Senate, of 32 Democrats, and in the House of 97 Democrats, 2 Republicans, and 1 Populist. Arkansas returned 5 of her 6 Democratic representatives in Congress, and elected Charles C. Reid in place of William L. Terry. In the national election Bryan received 81,142 votes and McKinley, 44,800. In 1896 Bryan received, 110,103 votes and McKinley, 37,512.

State Officers and Representatives.—State officers for 1900: Executive—governor, Daniel W. Jones; secretary of state, Alexander C. Hull; treasurer, Thomas E. Little; auditor, Clay Sloan; attorney-general, Jefferson Davis; superintendent of education, J. J. Doyne; commissioner of agriculture, Frank Hill; land commissioner, J. W. Colquitt.

Supreme Court: Chief justice, Henry G. Bunn; associate justices, Simon P. Hughes, C. D. Wood, Burrill B. Battle, and James E. Riddick; clerk, P. D. English.

State officers for 1901: Executive—governor, Jefferson Davis; lieutenant-governor, Robt. L. Lawrence; secretary of state, John W. Crockett; treasurer, Thos. E. Little; auditor, T. C. Monroe; attorney-general, George W. Murphy; superintendent of education, J. J. Doyne; commissioner of agriculture, Frank Hill; commissioner of insurance and ex-officio commissioner of public lands, John W. Colquitt. Supreme Court: Same as for 1900.

Congressional representatives for 1900 (56th Congress): P. D. McCulloch, Jr. (Mariana); John S. Little (Greenwood); Thomas C. McRae (Prescott); William L. Terry, H. A. Dinsmore (Fayetteville); S. Brundidge, Jr. (Searcy)—all Democrats.

Congressional representatives for 1901 (57th Congress): Same as in 1900, except that Charles C. Reid (Morrilton) replaces William L. Terry.

Senators for 1900 (56th Congress): J. H. Berry (until 1901) and James K. Jones (until 1903)—both Democrats.

Senators for 1901 (57th Congress): J. K. Jones (until 1903), from Washington; vacant.

Constitutional Amendment.—In September a constitutional amendment was ratified permitting surety companies to sign bonds of state, municipal and county officers.

ARMENIA and Kurdistan in eastern Asia Minor form a part of the Turkish Empire, and they comprise the three vilayets of Erzerum, Mamuret-ul-Aziz, and Diarbekir, and the two districts of Van and Bitlis. The total area, which is often called simply Armenia, is estimated at 72,491 square miles and the estimated population is 2,472,400; other estimates place the area at about 90,000 square miles and the number of inhabitants as high as 5,000,000. It is probably safe to say that the latter figure is too large. Since 1894 many Armenians have emigrated to other parts of the Turkish Empire and to Russia. The Armenians are Christians belonging to the Gregorian Church, but some, though retaining their own ritual, acknowledge the authority of the Pope of Rome. In 1894 the Christians suffered terrible atrocities at the hands of the Moslems, and the Porte promised reforms, but persecutions began again in November, 1895, and at the end of the year, it is said, nearly 500,000 Armenians were practically homeless. It has been estimated that about 80,000 Armenians perished from the time the massacres commenced in 1894 to the spring of 1896. For the next few months there was comparative quiet, but in September horrible massacres occurred at Kharput and Egin. Seemingly fearful of disturbing the European *status quo*, the powers took no active steps toward intervention, and the Porte was indifferent in the matter of bringing about its promised reforms. In 1898, though occasional outrages took place, there was no concerted attempt on the part of the Kurds or Turkish military at massacre in Armenia, but so great was the damage already done that in 1899 great destitution prevailed and many thousands, it was reported, were dependent upon charity. In October of that year the Sultan ostensibly took up the matter of ameliorating Armenian conditions, but during 1900 these conditions for the most part remained intolerable. On May 24, 1900, the Armenian Patriarch, or head of the church, who, on account of the persecutions had suspended his ecclesiastical functions, was advised of two iradés of the Sultan ordering him to resume his duties and granting: "The cessation of the difficulties exceptionally created in regard to the Armenians; the preservation of the rights of the Patriarchate over all the Armenians in Turkey, including the election of the Catholics of Sis; the remission of the arrears of the military tax in the case of Armenians who have suffered misfortune, and the granting of facilities for the payment of the tax in future." Notwithstanding this conciliatory attitude of the Sultan various outrages subsequently occurred. In August, 1900, was reported the burning of the small village of Spaghank, in Sassun, and the massacre of the inhabitants by troops commanded by General Ali Pasha and assisted by Kurds, the estimates of the number killed varying from 60 to 500. Other villages were pillaged. Though the British, French, and Russian ambassadors drew the serious attention of the Porte to the matter, little or no amelioration seems to have been effected; for subsequently there were reports of frightful pillage, outrage, and massacre, in the vilayet of Diarbekir in October, and in November an Armenian convent at Bor, near Bitlis, was burned by Kurds and the superior was wounded.

According to a report from the Bishop of Mush in the autumn of 1900, the Armenian peasants in Mush and Van had been completely stripped of their property by the Kurds and many had died of starvation. "Among the female youth . . . no girl or woman has escaped outrage. The despair of all Armenians in these districts is such that they have come to wish that a general massacre might terminate their sufferings." Armenian affairs had come to such a pass toward the close of the year that the Council of the Patriarchate suspended its sittings, asserting that the Porte's continued disregard of its requests render it impotent.

ARMIES. See articles on the separate countries.

ARMOR PLATE. See UNITED STATES (paragraph Navy).

ARMSTRONG, First Baron, WILLIAM GEORGE, a distinguished engineer and scientist, died in England on December 27, 1900, being widely known as the head of the famous ordnance manufacturing works at Elswick, Newcastle. He was born at Newcastle-upon-Tyne, November 26, 1810, and after receiving his education at Wickham school, Bishop, Auckland, he determined to follow the profession of law, but

when he had spent several years in practice he was diverted from this calling by a taste for scientific research. One of his earliest discoveries was the hydro-electric machine, which at the time was the most powerful device for producing frictional electricity. It consisted of an insulated boiler, from which steam at high pressure escaped through a series of nozzles of peculiar design. In recognition of this discovery, he was in 1846 made a Fellow of the Royal Society. Armstrong was the inventor of the hydraulic crane, and for the construction of hydraulic machinery he founded the Elswick Engine Works. It was at these works that the rifled cannon with which his name is associated as inventor were first made in 1854. So successful were these guns that the inventor was made an engineer of rifled ordnance at Woolwich in 1859, and was knighted in the same year. Between 1859 and 1863, under Sir William's direction, some 3500 of these cannon were constructed, and at the latter date he resigned his official position to resume his connection with the Elswick Manufacturing Company. In 1863 he was president of the British Association, and delivered an address in which he called attention to the decrease in the coal supply of Great Britain and the exhaustion of the deposits. Sir William Armstrong served as president of the Institution of Civil Engineers in 1882, and also of the Institution of Mechanical Engineers for several terms, in addition to being a member of the Iron and Steel Institute of Great Britain. From the latter organization he received the Bessemer medal in 1891, and previously, in 1873, he had received the Albert medal from the Society of Arts. Cambridge honored him with the degree of LL.D. in 1862, and in 1870 he received the degree of D.C.L. from Oxford. In 1887 he was raised to the peerage. Lord Armstrong was a liberal benefactor to Newcastle, and was one of the best-known manufacturers of Great Britain. He was the author of a number of scientific and technical papers and also published *A Visit to Egypt* (1873), and *Electric Movements in Air and Water* (1897).

ARMY OF SANTIAGO DE OUBA, SOCIETY OF THE, organized in Cuba in 1898, consists of all men who participated in the expedition to Santiago and took part in the campaign. President, Major-General W. R. Shafter, U.S.V.; secretary, Major Alfred C. Sharpe, U.S.V., Washington, D.C.

ARNOLD, THOMAS, son of the late Dr. Arnold, of Rugby, and an English man of letters, died November 12, 1900. He was born at Laleham in 1823, and studied at University College, Oxford, at the crisis of the Oxford movement. It was in 1856, however, while he was in New Zealand, that Newman's previous influence resulted in Mr. Arnold's entering the Roman Catholic Church. Returning to England, he became a professor in the Roman Catholic University at Dublin. He was afterward at the Oratory School at Birmingham and at Oxford. Meanwhile he published his *Manual of English Literature*, a translation of Beowulf, *Select English Works of Wyclif* (3 vols., 1869), and editions of *Henry of Huntingdon* and *Symeon of Durham* for the Rolls' Series.

ARTISTS, SOCIETY OF AMERICAN, founded in 1877, in 1900 had 107 members, holds annual exhibitions at its building, 215 West Fifty-seventh Street, New York City. President, John La Farge; secretary, Bruce Crane. In the exhibition of 1900 the annual Webb prize of \$300 was awarded to W. E. Schofield, and the Shaw fund to Irving R. Wiles. The Webb prize will hereafter be given for the best landscape or marine picture by an American painter not previously a receiver of the prize; the Shaw fund has been replaced by a Shaw prize, \$300, for the best American figure composition in oil, portraits excluded. An annual prize of \$500 has been given by Andrew Carnegie for the best American oil painting not a portrait.

ART STUDENTS' LEAGUE, of New York, formed in 1875, to conduct classes of instruction in painting, drawing, modelling, and composition, had in 1900 a membership of 407 and 1035 students. Advisory director, John La Farge; corresponding secretary, Miss Florence K. Upton, 215 West Fifty-seventh Street, New York City. In all the 26 years of the existence of the Art Students' League of New York it has been entirely self-supporting.

ARTS CLUB, NATIONAL, was organized in 1808, for the purpose of showing the art-loving public what has already been accomplished by Americans in the way of decorative arts. Its membership numbers 1100. President, George B. Post; secretary, Charles de Kay, 37 and 39 West Thirty-fourth Street, New York City. The club opened its new house in 1899 at 37 West Thirty-fourth Street. It held twelve exhibitions up to June, 1900, showing paintings, water-colors, pastels, bronze sculptures, potteries, embroideries, basket and leather work, gold and silver objects, and others of the industrial and fine arts. In November, 1900, it added No. 39 West Thirty-fourth Street to its old quarters; the improvements include a second gallery for exhibitions, which can be thrown together with the old gallery to form a single large hall, and a new art library.



Comparative Area.
PENN.
45,215 Square Miles.

ASIA.
Scale of Statute Miles.
100 200 300 400 500 600
Kilometers.
100 200 300 400 500 600

Capitals of Countries: Secondary Capitals:
Railroads: Completed Proposed or under Construction
Sandy Deserts: Swamps:
Principal Caravan Routes:

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ASBESTOS. The production of asbestos in 1899 amounted to 681 short tons, with a value at the mines of \$11,740. This, with one exception, is the largest output in the last fifteen years, and was furnished entirely by the States of California and Georgia, especially the latter. During the last ten years, according to the United States Geological Survey, the value of the imported material has averaged nearly \$270,000.

ASCENSION, an island having an area of 35 square miles and belonging to Great Britain, lies in the Atlantic about 900 miles west of the mouth of the Congo and 700 miles northwest of St. Helena. It is an important naval station, possessing a steam factory, naval and victualling yards, and a coaling station, and it has been recently fortified. The administration of the island is under the British Board of Admiralty, by whom a naval officer is appointed as captain in charge, this officer since 1899 being Captain G. N. A. Pollard, R.N. The population consists of only about 250 officers, seamen, and marines, some having their families with them, and less than 200 Kroomen.

ASHANTI. See GOLD COAST.

ASHURST, JOHN, JR., M.D., eminent surgeon of Philadelphia, died in that city July 8, 1900, at the age of 61. He graduated at the University of Pennsylvania, 1857, receiving his medical degree there three years later. Service in army hospitals during the Civil War was followed by 40 years of successful practice. Dr. Ashurst was professor of surgery at the University of Pennsylvania, and a writer of authority on surgical topics. He edited the *International Encyclopædia of Surgery* (6 vols., 1881-86) and was the author of the *Principles and Practice of Surgery* (1871), a standard work.

ASIA. Details concerning the countries of Asia will be found in the separate articles on the countries themselves. The following table is presented for purposes of comparison, and, while the figures are in many cases conjectural, they suffice to show the extent to which the partition of Asia among European nations has been carried.

		Area in Square Miles.	Population.
Russia in Asia.	Northern Caucasasia.....	89,497 (1897)	3,786,784
	Trans-Caucasia.....	91,340 "	5,461,911
	Caucasus.....	180,843 "	9,248,695
	The Steppes.....	908,073 "	3,451,385
	Turkistan.....	257,134 "	3,898,105
	Trans-Caspian.....	214,237 "	372,193
	Western Siberia.....	870,818 "	3,367,576
	Eastern Siberia.....	3,044,512 "	1,992,221
	Amur region.....	880,830 "	339,127
	Sakhalin.....	29,336 "	28,166
	Dependencies Bokhara.....	92,000 "	2,500,000
	Khiva.....	22,320 "	700,000
	India and dependencies.....	1,559,603 (1891)	287,123,350
	Aden and Perim.....	80 "	41,910
British Asia.	Bahrein Islands.....	.....	.....
	British North Borneo.....	31,106 "	175,000
	Brunei.....	3,000 "	.....
	Sarawak.....	50,000 "	.....
	Ceylon.....	25,333 (1897)	3,391,443
	Hong Kong.....	29 (1898)	248,710
	Baluchistan.....	130,000 (1891)	500,000
	Sikkim.....	2,818 "	30,458
	Great Andamans.....	1,760 "	.....
	Little Andamans.....	.....	.....
	Nicobar Islands.....	634 "	6,915
	Laccadive Islands.....	.....	14,440
French Asia.	Labuan.....	30¼ "	5,853
	Straits Settlements.....	32,933 "	930,809
	India.....	197 (1895)	286,910
	Anam.....	81,000 "	6,000,000
	Cambodia.....	46,000 "	1,500,000
	Cochin-China.....	22,950 (1897)	2,035,000
Portu- guese Asia.	Tonquin (with Laos).....	135,000 "	12,000,000
	India (Goa).....	1,390 (1887)	494,836
	" (Damao, Diu).....	168 "	77,454
	Indian Archipelago.....	7,458 "	300,000
	China (Macao, etc.).....	4 (1886)	78,627

ASIA MINOR. See ARCHÆOLOGY.

ASIATIC ASSOCIATION, AMERICAN, organized in 1898 for the purpose of fostering commercial relations between the United States and the East, had in 1899 a membership of 240. Presidency vacant on account of the death of Mr. Everett Frazar; acting president, Samuel D. Brewster; secretary, John Foord, P. O. Box 1500, New York City.

ASPHALT. The asphaltic materials obtained in the United States include the purer forms of asphaltum, such as elaterite, gilsonite, maltha and albertite, and the sandstones and limestones impregnated with bitumen. The total quantity produced in 1899 amounted to 75,085 short tons, valued at \$553,904, and came chiefly from California, with smaller amounts from Colorado, Utah, Kentucky, Indian Territory, Texas, and Oklahoma. The chief foreign supply continued to be the Island of Trinidad, off the coast of Venezuela. Other imports were from Venezuela, Switzerland, France, Germany, and Cuba. The imports for the year ending June 30, 1899, amounted to 82,893 long tons, valued at \$283,440. The world's production for the principal countries in 1898 was as follows:

Country.	Short tons.	Value.	Country.	Short tons.	Value.
United States.....	76,337	\$675,649	France	252,358	\$322,117
Trinidad	119,927	Not given.	Italy	103,312	256,347
Germany	14,130	19,423	Spain	2,604	4,605

See OZOKERITE.

ASSEMBLY, GENERAL. See PRESBYTERIAN CHURCH IN THE UNITED STATES OF AMERICA (NORTH) and PRESBYTERIAN CHURCH IN THE UNITED STATES (SOUTH).

ASSOCIATE REFORMED SYNOD OF THE SOUTH, founded 1821, the only division of Associate Reformed Presbyterians which has retained an independent organization. It reports for 1900, 104 ministers, 131 churches, and 11,344 communicants, an increase of 980 over last year. Stated clerk, Rev. James Boyce, Huntersville, N. C.

ASSOCIATED PRESS. On February 19, the Supreme Court of Illinois handed down an important decision in the suit of the Inter-Ocean Publishing Company against the Associated Press. The history of the suit is briefly as follows: The Associated Press, representing a combination of several smaller news organizations, was first incorporated in Michigan, and was later, and in 1892, re-incorporated under the laws of Illinois, for the purpose of collecting news from all centres of events and of selling this news by retail to publishing companies who contracted therefor. By-laws of the Associated Press provided that no members—i.e., customers—of the company should buy news from any other news-collecting and selling agency, if the Associated Press decided that such other news-collecting and selling agency was "antagonistic" to the Associated Press. And if any members or customers of the Associated Press persisted in buying news against the direction of the Associated Press, they might be suspended from the association, which is to say, that the Associated Press would refuse to sell them any more news. The association waxed in power until it controlled nearly all the news gathering and distributing throughout the United States and Canada. In 1894 the news agencies of the New York *Sun* were declared "antagonistic" to the Associated Press, and the market of the former was thereby curtailed. The Chicago *Inter-Ocean*, however, one of the original members of the Associated Press, decided that it needed the *Sun's* news. Due notice was served upon the *Inter-Ocean* that action was to be taken in the matter by the Associated Press in accordance with the provisions of its by-laws. The *Inter-Ocean* thereupon filed a bill of injunction in the County Circuit Court to restrain the association from cutting off its news, on the ground that such action would work irreparable injury to the *Inter-Ocean*, would deprive the public of needed, important and necessary news, and would tend to create a monopoly in favor of the Associated Press. Both the Circuit Court and the Appellate Court dismissed the injunction, holding that, though the by-laws of the Associated Press were clearly against public policy, yet the *Inter-Ocean*, by subscribing to them, had become *particeps criminis*, and hence could not obtain relief in equity. The Supreme Court, to which the case was then taken on appeal, reversed these decisions, and directed that the *Inter-Ocean* should neither be suspended from membership in the Associated Press nor should its news supply be cut off. The court held that the Associated Press was engaged in a public business in the same sense as a telephone or telegraph company, and that it was under obligations impartially to serve the public like any other public carrier; that it must therefore sell its news on equal terms and without discrimination to all newspapers which contracted therefor. The court held further that the by-laws of the Associated Press, if sustained, would "enable the appellee to designate the character of the news that should be published, and

whether true or false, there could be no check on it by publishing news from other sources. Appellee would be powerful in the creation of a monopoly in its favor, and could dictate the character of news it would furnish, and could prejudice the interests of the public." Such by-laws the court held to be against the public interest, unconstitutional, and void.

The answer of the Associated Press to this decision was to reincorporate its business under the laws of the State of New York.

ASSOCIATION OF AMERICAN AGRICULTURAL COLLEGES AND EXPERIMENT STATIONS. See HORTICULTURE and AGRICULTURE.

ASSOCIATION OF AMERICAN UNIVERSITIES. See UNIVERSITIES, AMERICAN, ASSOCIATION OF.

ASTEROIDS. See ASTRONOMICAL PROGRESS.

ASTRONOMICAL PROGRESS DURING THE YEAR 1900. The astronomical work of the year just past is described briefly in the following pages. It has been characterized especially by the rapid extension of photographic processes in all departments of the science. The two principal events of the year were the total solar eclipse of May 28 and the favorable opportunity to observe the new planetoid Eros in October, November, and December.

The New Planetoid Eros.—We have already referred to the discovery of this little planet in the YEAR BOOK for 1898, and pointed out that it is very favorably situated to aid in the determination of the solar parallax. At certain times it can approach the earth nearer than any other body in the solar system, except, of course, our own moon; and this fact enables us to secure unusual precision in measuring the planet's distance from the earth. It is from this measured distance that we afterward obtain by a process of calculation the exact value of the sun's distance. One of the very favorable opportunities to observe Eros for this purpose occurred in the latter part of the year 1900; and since the beginning of October astronomers have been busy the world over in making the necessary observations. It is too soon as yet to report on the results, because the calculations, necessarily very intricate, will probably require a few years for their completion; but a very extensive series of observations has been secured, and it seems safe to expect a material addition to the precision of our knowledge as to the sun's distance. Most of the observations have been photographic, but the planet has also been observed visually with several of the large telescopes. The whole operation has been carried out on a co-operative plan, more or less under the general supervision of an international committee, of which the president is M. Loewy, director of the Paris Observatory.

The institutions taking part in the work in the United States have been the Naval Observatory, the Lick Observatory in California, the Yerkes Observatory, near Chicago, and the observatory of the University of Minnesota at Minneapolis. At the Lick Observatory the observations have been made by the photographic process, using a large reflecting telescope known as the Crossley Reflector. This instrument is three feet in diameter, and it has been possible to secure good photographs of Eros with exposures ranging from ten to twenty seconds only. The whole series of photographs secured at this observatory during the favorable period of observation will number not less than seven or eight hundred, and it may be expected confidently that they alone will lead to most valuable results. When taken in conjunction with further extensive series of observations made in the United States, and similar ones at the European observatories and at the Cape of Good Hope, they will certainly carry the precision of our knowledge of the sun's distance a very decided step nearer the astronomer's goal of exact truth.

Total Eclipse of the Sun.—On May 28, 1900, a total eclipse of the sun occurred, visible in America, Spain, and northern Africa, which was observed at many stations along the path of totality. Before describing the observations and the scientific results obtained, it may be well to remind our readers that we have records of eclipses of the sun that happened as long as three thousand years ago. To the people of those early times a solar eclipse seemed to presage famine or some terrible calamity that was to befall the human race. The predicting of an eclipse fifty years before it takes place, telling to the minute the instant of totality, is to the uninitiated one of the most marvellous feats of the human mind. It is not a particularly easy problem, but now that the motion of the moon is well understood, it is one that gives the astronomer no great amount of difficulty.

To understand the cause of an eclipse, we must remember that the earth revolves about the sun and the moon about the earth. If the moon's path and that of the sun were in the same plane, there would be an eclipse of the sun at every new moon and an eclipse of the moon at every full moon. The moon's path, however, is inclined about 5° $8'$ to the ecliptic, or plane of the earth's orbit; and, hence, it is only on special occasions that the moon is near the ecliptic at the time of new moon, the

necessary condition to cause an eclipse of the sun. While there are, at least, two of these phenomena every year, and may be as many as five, most of them are only partial or annular, and have little of interest for the astronomer. Most people have seen a total lunar eclipse, but comparatively few a total eclipse of the sun, the reason being that the former may be seen throughout an entire hemisphere, while the latter is visible only in a strip of country whose maximum width is two hundred and thirty miles.

On May 28, 1900, the eclipse began at sunrise well out in the Pacific Ocean, the shadow travelling eastward across Mexico and passing into this country at New Orleans. Progressing at the rate of about one thousand miles per hour, it covered a path about fifty miles wide, advancing in a northeasterly direction and leaving the United States near Norfolk, Va. Crossing the Atlantic Ocean at this cannon-ball speed, the shadow, after taking a southerly direction in the middle of the ocean, passed through Spain and across the northern part of Africa. It was visible so near home for American astronomers that most of the larger institutions of learning sent out expeditions. The members of these various expeditions stationed themselves along the path of totality at points where the best weather conditions might be expected and where their particular line of work might be carried out with the best hopes of success.

There are many problems connected with the sun which are still unsettled. The few precious minutes of a total eclipse are the only occasions when most of these questions can be attacked, and for this reason astronomers are willing to travel enormous distances and spend time and energy to see the sun in eclipse. The investigations which were carried out by means of telescopes, photographic plates, and spectroscopes had for their aim the settling of some of these problems. We have only space here to mention briefly some of the more important investigations with their results.

Lunar Tables.—The four times at which the two edges of the moon come in contact with those of the sun are observed, the second and third contacts being the beginning and ending of the total phase. These observations determine accurately the relative position of the sun and moon at the time, and so furnish the means of correcting the tables of their motions.

The Search for Intra-mercurial Planets.—This year the attempt to find these objects, thought to have been seen in 1878 by Watson and Swift, was by photography. Mercury was very brilliant, but no bodies were discovered whose orbits lie between this planet and the sun.

Shadow Bands.—We are no nearer a true explanation of this phenomenon than we were at the last eclipse. Lasting for a period of about two minutes before and two minutes after totality, there was visible on a sheet laid on the ground for the purpose a quivering appearance which reminds us somewhat of heat waves seen over a hot stretch of country, although not so distinct. Undoubtedly, the phenomenon is purely atmospheric and of little importance, but it is not yet sufficiently understood.

Spectroscopic Results of the Eclipse.—These are the most important of the whole eclipse work. The luminous surface of the sun directly visible to our telescopes is the photosphere. This is probably a layer of luminous cloud formed by condensation into little drops and crystals of certain substances which exist in the interior of the sun in a gaseous form, but are cooled at its surface below the temperature necessary for their condensation. If light from this photosphere could come to us direct without passing through any vapors either on the earth or on the sun, the solar spectrum would be continuous—that is, the light would change from red, orange, yellow, green, blue into violet without any breaks or dark lines appearing. The presence of dark lines in the solar spectrum tells us, as was first shown by Kirchhoff in 1859, that the photosphere is surrounded by a layer of vapors at a lower temperature than the photosphere itself. This is the so-called “reversing layer.” It is by absorption of light passing through these vapors that the dark lines are formed. These lines are dark, however, only by contrast with the bright continuous spectrum. If it were possible to shut off the light which gives this bright part, the lines which appear dark in contrast to the bright solar spectrum ought to appear bright. The moon is the body which completely shuts off the light of the photosphere at the time of a total eclipse. With this in mind, Young, of Princeton, predicted before the eclipse of 1870 that the lines would change from dark to bright and flash out at the instant of totality. This was noticed first at that eclipse, and so brilliant was the change that the term “flash spectrum” was given to it. This appearance lasted about two seconds, and since in this time the moon would cover up about five hundred miles of the sun's surface, the “reversing layer” was thought to have about that thickness. It was Young's impression that all the dark lines were reversed—that is, turned into bright lines—but others have not agreed with him, in particular, Lockyer, of England. According to the latter, the substances which we call chemical elements on the earth are not elements at the enormous temperature of the sun, but

are dissociated, or broken up, into still smaller parts. He says there is no *thin* reversing stratum of vapors, about 3 per cent. only of the lines being reversed. The question could not be settled by seeing the phenomenon for a couple of seconds at eclipses two or three years apart, but had to rest in this state until a permanent record of the "flash spectrum" could be obtained, which was done first by photographing at the eclipse of 1896. From that time most of the energies devoted to eclipse work have been spent with a view of settling this problem. The chief advance in the eclipse of 1900 was in the method of observation, much more powerful instruments being used and a permanent record obtained by the use of photographic plates. Greater power was employed than ever before, mainly by using those marvelous instruments made by Rowland, of Baltimore—namely, gratings. He is the only one who has been able to manufacture successful gratings, the difficulty being a mechanical one, which will be appreciated when we consider that a grating is made by ruling with a diamond point on a highly polished plane or spherical concave surface parallel and equidistant lines to the number of fifteen or twenty thousand to the inch. This ruling on a plane surface gives us the plane grating, on a spherical surface the concave grating. These form the most powerful spectroscopes at present known to science, and by means of them the lines of the spectrum are separated to a greater extent, or, in technical language, a greater dispersion is attained. Both kinds of gratings were used in 1900, as well as the combination of prism and camera, known as the "prismatic camera," which was used in 1896 and 1898. Many successful photographs were obtained, the weather conditions along the path being everywhere perfect.

The conclusions drawn from these investigations are that at least 60 per cent. (and probably many more) of the stronger dark lines of the solar spectrum are found to be bright in a stratum not extending (for the majority of the lines) more than five hundred miles in height above the solar photosphere. There is no reason to suppose this is not equally true of the fainter lines. We are, therefore, forced to the conclusion, from these 1900 photographs, that a reversing layer exists.

Prominences.—Above the photosphere and interpenetrating the reversing layer is an envelope of permanent gases called the *chromosphere*, and from it prominences of various kinds arise, sometimes to the height of hundreds of thousands of miles. These are luminous jets, mainly of hydrogen, which at times shoot up from the sun with such enormous velocities that with a telescope they can be actually seen to move. The best views of prominences can be obtained at the time of an eclipse, but they can also be seen without an eclipse by means of the spectroscope, as was first shown in 1868 by Lockyer and Janssen. Astronomers have, therefore, lost interest in prominences as eclipse phenomena, and prefer to spend the few precious minutes on appearances that are visible then and at no other time.

Corona.—Outside the chromosphere stretches the very mysterious corona. This is the halo which surrounds the sun at the time of totality. It has been known from remotest times, and has been described with enthusiasm as being certainly one of the most beautiful of natural phenomena. The portion of the corona nearest the sun is dazzlingly white with a slight pearly shade, which contrasts finely with the scarlet prominences. It is made up of streaks and filaments, which, in general, radiate in straight lines from the sun's disc. In places, however, they are strangely curved, particularly at the sun's pole. In general, these filaments are longest at the sun's equator, which gives a somewhat rectangular appearance to the corona. At the 1900 eclipse the streamers were visible on the east to a distance of between two and three diameters of the sun and to a slightly less extent on the west, giving a wing-shaped appearance. The polar rays were beautifully curved, but could be traced only a short distance from the pole. The cause of the corona is still in doubt, but its form seems to be dependent on whether sun-spots are at a maximum or minimum. The shape of corona predicted from this point of view was the one that actually was seen at the last eclipse.

While the eye can, perhaps, grasp some of the details of the corona more satisfactorily than can the photographic plate, skilled observers, however, differ so widely in drawing the same eclipse that it has resulted in little confidence being placed in the scientific accuracy of corona sketches and in depending almost wholly on photographs. All sizes of instruments were used to photograph on May 28, from the smallest kodaks to a photographic telescope of 135 feet focal length, used by Barnard, which gave an image of the sun of over thirteen inches diameter. A great many different schemes were tried in connection with these cameras, among these being the use of shutters to cut down the exposure on the bright inner corona, giving full exposure to the outer corona, and in this way getting a complete picture on a single plate. None of these experiments resulted very successfully. Color screens were also used, in order to photograph with either the green light alone or with yellow, green, and blue; the violet, which acts chemically on the photographic plate most quickly, being so completely absorbed by the screen that none of it reached the

plate. These screens were employed in order to get photographs which would show the corona as we see it, the eye being most sensitive to yellow, green, and blue light. Many good photographs were made, but they did not succeed in showing much difference in detail from the ordinary photographs taken without screens.

Spectrum of the Corona.—The chief line in the spectrum of the corona visible at previous eclipses was a bright line in the green. Observers in 1900 were universally much disappointed in the spectrum, for even this line was seen with difficulty, and the whole spectrum lacked brilliancy and detail. The 1900 eclipse has, therefore, told us very little about the corona. We know that the matter composing it is extremely rare, for comets have passed through the corona without suffering any retardation of speed. It cannot be an atmosphere in any way similar to ours, for it has been traced to a distance of nine million miles from the sun. Its light is partly reflected, as it gives a faint continuous spectrum, and partly self-luminous, as there are bright lines in the spectrum. The dependence of its form on sun-spots, noted above, and the connection of sun-spots with terrestrial magnetism and corona lead us to the conclusion that the corona is in some way an electrical manifestation, but the cause of this is not at present apparent.

Heat of the Dark Moon.—For the first time in the history of eclipses the *bolometer* has been applied to measure the heat of the moon. This is an instrument used to measure exceedingly small differences of temperature. The rays from the body investigated are brought to a focus on some very fine platinum strips. If the temperature changes and these strips become heated, the resistance to the passage of an electric current is increased, and this increase can be measured, thus giving a measure of the change in temperature. The bolometer is so sensitive that changes of the one-millionth of a degree centigrade can be measured. The experiments with this instrument on the total eclipse were not, on the whole, satisfactory.

We cannot say that the eclipse of 1900 has settled all the problems connected with the sun, but, rather, that there are a great many investigations for the astronomers and physicists of the twentieth century to undertake.

Polar Photography.—Very interesting results have been obtained this year from the study of photographs of the stars closely surrounding the pole of the heavens. The work was undertaken primarily for the purpose of investigating the so-called "optical distortion" of photographic telescopes. Very soon after the earlier applications of celestial photography the suspicions of astronomers were aroused as to whether photographic telescopes really furnish us perfectly correct representations of the celestial objects as they appear in the sky. For instance, if there were on the sky a series of stars, forming an exact circle, and if we were to photograph that circle, would it appear on the negative in a perfectly circular form, or would the passage of the stars' light through the lenses of the telescope distort the circle slightly, so that it would appear, perhaps, slightly oval? Of course, this is a matter of fundamental importance. If we are to substitute microscopic measurements upon a photographic plate for direct visual measurements upon the sky, it is absolutely essential that the photograph subjected to measurement shall be a correct representation of that which we would have measured upon the sky itself.

The simplest way of ascertaining whether the photographs are really thus distorted to any appreciable degree, and, indeed, the way which first suggested itself to astronomers, was to repeat by photographic processes the measurement of some of the star groups that had been already carefully investigated by older and well-accredited methods of measurement. Researches of this kind have been made by various astronomers. The historic group of the Pleiades was examined photographically by Rutherford, and the results have been compared with the catalogues of Bessel and Elkin. In a similar way photographic measurements were made by Donner of a certain group of stars which had been very carefully measured by visual methods at a number of different observatories a few years ago. All of these comparisons seemed to prove that the distortions, if they exist, are certainly quite small; so small, in fact, that it is next to impossible to determine their magnitude by this method. For when photographic measures are compared with visual observations, even the most accurate ones, we are comparing with the results of mere fallible human observations, and not with exact truth. Therefore, the differences that we get may be due in part to the slight remaining errors of the visual results, and we are left in doubt finally as to the real precision of the photographic method. Donner's researches, however, led to one interesting result. It appeared from his comparison that measurements upon the photographic plate were subject to different errors, according to whether such measurements were made parallel to one edge of the plate or to the edge at right angles to it. He found that a linear distance of one millimetre on the plate corresponded to a slightly different number of seconds of arc on the sky, according to the *direction* of measurement on the plate. It looked very much as if his photographic telescope worked differently with the vertical and horizontal sections of its lens.

To test this matter a new series of photographs was made. It had been pointed out some years before by Jacoby that a very good experiment for the study of optical distortion could be made in the following way: Suppose the photographic telescope be pointed directly at the pole of the heavens and a negative made, and then a second negative with the telescope still pointed at the pole of the heavens, but revolved through a right angle about the axis of the telescope stand. We would thus get two negatives of precisely the same set of close polar stars, but with the horizontal and vertical sections of the lenses interchanged, as it were, for the two negatives. An intercomparison of measurements on these two negatives ought to produce differences arising solely from the interchanging of the lens sections, since the same stars appear in both negatives. A previous knowledge of the stars' positions on the sky, as derived from visual observation, is entirely unnecessary.

A series of negatives according to this plan was made forthwith by Donner at the observatory of Helsingfors. They were sent to the Columbia University Observatory, New York, and there measured under the microscope. The extensive mathematical calculations needed for the discussion of these measures were made at Vassar College by Dr. Furness, and the final results have been published this year. Four negatives were thus measured and discussed, and Dr. Furness found that the interagreement of all four was practically perfect, within the limits of the necessary errors of microscopic observation. Furthermore, it was found that Donner's discordant result is due very probably to a slight error in one of the mathematical formulas used by him in the calculation of his observations. Astronomers have, therefore, been able to conclude that so far as they may judge from the evidence in hand there is little or nothing to fear from optical distortion. The result is a very high tribute to the skill of opticians and lens-makers. As a sort of by-product of this investigation astronomers have been put in possession of a highly accurate catalogue of sixty-five faint stars, situated within about one degree of the pole of the heavens. This satisfactory outcome of the whole undertaking may be counted as one of the more important contributions to the astronomy of the year 1900.

Trail Photographs.—The foregoing researches have led the astronomers of Helsingfors and Columbia University to combine in another plan, which bids fair to add very much to the precision of our knowledge of several fundamental constant quantities of astronomy. A new determination has been thus undertaken of the "constant of nutation," and the investigation will probably lead also to new values of the "aberration of light" and possibly even the "constant of precession."

It will be necessary to remind the reader very briefly of the meaning of these technical terms. The rotation axis of the earth about which it turns once every day, giving rise to the various phenomena of the rising and setting of the heavenly bodies—this axis is not fixed in direction, but is subject to slow changes of position. The two points where the terrestrial axis pierces the surface of the earth are, of course, the terrestrial poles; and if the earth's axis be imagined extended out until it reaches the celestial sphere, the two corresponding points where it pierces that sphere are called the celestial poles. Thus, any change of direction in the axis of the earth will produce a corresponding change in the position of the celestial pole among the stars in the sky. In fact, the celestial pole is continually wandering among the stars.

The principal motion has been known for centuries, and is called *precession*. It consists chiefly of a circular motion of the pole about a certain fixed point in the sky called the pole of the ecliptic. The radius of the circle in which the celestial pole thus moves is $23^{\circ} 28'$, and it takes the pole twenty-five thousand eight hundred years to complete a circuit of the precessional circle. It is this motion that accounts for the well-known fact that the present pole star will not always be our pole star, but that a different star will occupy that position of prominence at different epochs in the earth's history. The cause of precessional motion is the gravitational attractions of the sun and moon upon the matter composing our earth. These attractions, however, do not act in such a way as to make the motion of the pole truly circular. Its actual path is a wavy line, oscillating a little to one side or to the other of the average path, which is circular. This little oscillation, or wave, in the pole's motion is called *nutation*.

It will be perceived that the fundamental mechanical theory of the earth and solar system must have as an essential part the exact evaluation of the quantity of precession and nutation. The only way to measure these phenomena is to determine from time to time the exact position of the celestial pole among the stars; to map out, as it were, the course of the pole among the fixed stars in the sky. To do this, the first thing is to have a method of finding out where the pole is among the stars on any given night when observations are made; and the investigation here described involves the use of a new method of doing this. The principle of this method is very simple. A telescope is pointed directly at the pole, and a photographic plate inserted in the usual way at the focus of the lens. A clear, moonless night being selected, the telescope is uncapped, and the stars close to the pole are allowed to

impress themselves upon the plate during the whole night. As these stars are apparently revolving around the pole, owing to the rotation of the earth on its axis, they will produce upon the photographic plate a series of circular arcs, or "trails," one corresponding to each star. These arcs will not be complete circles, because it is possible to continue the exposure only during the hours of perfect darkness, and the telescope must be capped again before the first streak of dawn becomes visible. The common centre of all circular arcs upon the photographic plate after it has been developed will give us the position of the pole among the stars. It is evident that this method should furnish a highly accurate determination of the pole's position, because a very considerable number of circular arcs can be measured on the plate and errors of observation diminished by taking the mean of a large number.

The principle of this method is thus extremely simple; but there are a number of conditions impairing somewhat its extreme simplicity, but admitting, nevertheless, of being rendered harmless. In the first place, the bending of light as it comes down to the telescope through the earth's atmosphere will prevent the arcs being truly circular: But the effects of this bending, or "refraction," of light can be eliminated from measurements on the plate by a process of calculation, and they can also be diminished very much in magnitude by making the photograph at a place on the earth where the pole is very high in the sky. The atmospheric bending, or refraction, is then much smaller, since the rays of light fall upon the surface of the atmosphere in a nearly perpendicular direction. To have the pole very high in the sky we must go to a place having a very high latitude on the earth, and it is for this reason that the observatory at Helsingfors is especially suitable for this work. It is the most northerly of existing observatories of importance, and has an elevation of the pole greater than 60° .

The second important condition affecting the accuracy of the method is the absolute necessity of having the telescope remain perfectly immovable during the entire period of any one night's photographic exposure. For if the telescope should move in the slightest degree, it would impair the circularity of the arcs and ruin the picture, just as it would ruin an ordinary portrait photograph if the camera were shaken during the exposure.

Preliminary experiments have been made in this way with the photographic telescope of the Helsingfors Observatory, and they have led to very satisfactory results. A trail photograph made in 1895 was sent to Columbia University Observatory, was there measured under the microscope, and the necessary calculations made with the results. It appeared from this work, which has been published by the St. Petersburg Academy of Sciences, that the method is promising in a very high degree. It was, therefore, decided to construct a new telescope especially for this purpose, arranged so as to secure more strongly the important condition of absolute immobility. The late Miss Bruce (*q. v.*), of New York, contributed very generously the funds necessary for making the new telescope, and the Russian authorities undertook the expense of putting up a building at Helsingfors and also the construction of a solid granite pier upon which to place the instrument. Unlike the ordinary astronomical telescope, this instrument has no motions whatever; in fact, every effort has been made to prevent its having even the slightest motion. The granite pier, which is very heavy, is fastened with cement directly to bed-rock, and the telescope itself is to be similarly cemented to the pier throughout its entire length as soon as it has been adjusted to point directly at the pole. The final installation of the new instrument was completed in November, and trail photographs will be made with it as soon as the Russian astronomers have finished photographing the new planet Eros, now so favorably situated for observation. The trail photographs will then be sent to Columbia University for measurement and computation.

It is hoped that besides admitting of a study of nutation, and after the lapse of time even of precession, that this method will give a new determination of the important astronomical constant of the aberration of light. This latter phenomenon should cause the circles described by the several stars to change their size at intervals of six months; and from this change of size it ought to be possible to obtain a new determination of the aberration. It is not improbable that we shall get in this way a very accurate determination; and it is certain that what we do get will be absolutely independent of any other methods or observations. Possibly the new process will thus ultimately lead up also through the constant of aberration to additional knowledge as to the solar parallax. (See in this connection the *YEAR BOOK* for 1898, page 56, article *SOLAR PARALLAX*.)

Determination of the Motions of Stars Toward the Earth and Away from it.—At this year's meeting of the Astronomical and Astrophysical Society of America, Campbell, of the Lick Observatory, presented papers of considerable interest on the above subject. To enable the reader to understand the results of his researches, we must recall briefly the manner in which the spectroscope enables us to measure stellar motion. In the first place, we should remember that, according to the accepted

theory, light is simply a succession of waves; and there is much popular misconception as to what waves really are. If a stone be let fall upon the surface of still water, a disturbance will be set up at the point where the stone first touches the water. This disturbance will then travel out in every direction, giving rise to a series of waves. These continue in ever-widening circles, but with gradually diminishing violence, until, finally, they become too small for us to see. Waves on the ocean's surface are of a similar character, only that here the disturbance is due to the action of wind, so that there is a less simple propagation of the wave disturbance, especially as new centres of movement are being continually produced at numberless different points. Now, the popular notion seems to be that ocean waves consist of vast masses of water rolling along the surface of the sea. But this is quite wrong. The water does not travel along from place to place. In general, each individual particle of water moves simply up and down, and it is only the disturbance we call a *wave* that is communicated from particle to particle, and thus seems to move along from place to place. A small chip of wood thrown into the ocean from a ship's deck can be seen to move straight up and down for a long time; whereas, if the whole surface of the sea were rolling along, the chip would travel rapidly away and be lost to view. The theory at present accepted considers light in motion to be an analogous propagation of a wave disturbance, and not at all actual travelling masses of matter. Only in the case of light the height and length of the individual waves is excessively small, many, many thousands being required to fill the space of one inch. The phenomenon we call *seeing* is, then, explained as the result of the arrival of a light-wave disturbance at the human eye. A distant star is to be regarded simply as the origin of a light-wave disturbance, like a stone thrown into still water. Our seeing the star is merely the arrival at our eye of the ever-widening circles of waves having their centres at the star.

And now, what does the spectroscope enable astronomers to do? It would carry us too far into technical details to explain just how the instrument is operated; but we can say in a general way that with it we can count the number of light waves received each second from any given luminous source. Now, the number of waves so received depends upon the kind of incandescent material of which the star is composed; and the number corresponding to each chemical substance is known from laboratory experiments. Sometimes we find that a star is sending us more waves than we should expect. This shows that the star must be itself approaching us in space. The waves are thereby crowded together somewhat, as it were, and we receive more per second than we would from a star at rest. Conversely, if a star is moving away from us, we receive relatively too few waves. Thus, by a spectroscopic analysis of starlight we can discover whether the star is approaching us or receding from us. Even the rate of this motion in miles per second can be determined quite accurately by measuring how much the number of light waves has been increased or diminished.

Having thus outlined very briefly the method of measuring stellar velocities spectroscopically, we come now to the subject-matter of Campbell's papers. He begins by calling attention to the extraordinary interest attaching to this class of work. Almost all the largest refracting telescopes in existence are being used to measure stellar velocities. Indeed, this is not at all surprising, for the spectroscope has given astronomy an absolutely novel kind of observational knowledge. The older forms of instrument, without exception, were quite unable to measure linear distances or velocities at all. They gave us only angles or directions. The astronomer could point his telescope at a star and then record the direction in which that star was situated, and the exact instant of time when it was so situated. In other words, he could record only the point on the dark background of the sky where the star appeared for the moment to be projected. All our former knowledge of distances in astronomy has been obtained from such measures of direction by means of mathematical calculations based on Newton's law of gravitation.

But Campbell sets forth the interesting fact that the relative powers of large and small telescopes are not quite what might be expected in researches of this kind. It should be understood that the spectroscope is generally used in connection with an ordinary astronomical telescope. The latter is employed in the usual way to gather with its great lens a distant star's light and bring it to a single point or focus at the other end of the tube. The light so gathered is then examined with the spectroscope, instead of the ordinary telescopic eye-piece. If the star under observation is very bright, the work of the spectroscope can be performed with comparative ease. But when we deal with fainter objects, there is the greatest difficulty in making the measures necessary to obtain information as to the number of light waves. Our only remedy is to use a very large telescope. Now, the light-gathering power of telescope lenses is in proportion to their size. The greater the surface of the lens, the more light can be concentrated with it. A thirty-six-inch glass, such as that in the Lick Observatory, has three times the diameter of a twelve-inch; and,

therefore, nine times the surface, so that it should gather nine times as much light. But Professor Campbell points out that the larger telescope suffers in an increased ratio from all those difficulties that result from the small but unavoidable imperfections of any instrument constructed by human hands. The same is true also of the difficulties caused by haze or other obstructions in the terrestrial atmosphere through which we look. On the whole, Professor Campbell's experience indicates that the thirty-six-inch can extend the work of a twelve-inch only about sixfold, instead of ninefold, as it should theoretically.

To obtain even this advantage many serious difficulties must be overcome. These are principally instrumental in character, and many are too technical to find a place in the present work. One of them may be mentioned, however, that will be appreciated by those of our readers who are acquainted with photography. Usually, spectroscopic observations are made photographically, the sensitive plate being substituted for the human eye, as is now so common in many forms of astronomical observation. And it has been found that small changes of temperature during the exposure of a photographic plate produce slight strains of the metal parts composing the spectroscopic apparatus. Thus, tiny flexures are brought about, invisible to the eye, but quite large enough to injure the clearness of the picture on the photographic plate, if not to ruin it entirely. To prevent this, Professor Campbell's entire spectroscopic has been enclosed in a wooden box, lined with felt. Whenever the temperature falls slightly during an observation the interior of that box can be warmed by sending an electric current through a coil of wire within it. The necessity of such precautions as this gives an idea of the extreme delicacy of the form of observations under discussion.

Professor Campbell has been able to make spectroscopic observations of the velocity of motion in the case of about three hundred stars. For those most easily observed, such as the comparatively bright Polaris, the uncertainty of a single velocity determination, when reduced to actual linear measures, is less than one mile per second; and this is considered to be a very extraordinary degree of precision.

Spectroscopic Binaries.—Of the three hundred stars whose velocities have been determined, Campbell finds no less than twenty-two to be *binary*. By this we mean that these stars are really double stars, made up of two separate components, moving, respectively, in orbits depending in all probability upon the Newtonian law of gravitation. These binary stars are called spectroscopic binaries, because they have been discovered with the spectroscope, and not in the ordinary way with the old-fashioned visual telescope alone.

The older double stars, such as the Herschels discovered, all had components separated by distances wide enough to be seen in the telescope, though to the unaided eye these stars appeared single, like the generality of others. But it is easy to imagine that there might be some pairs of stars knit together so closely that they would disclose their double character as little to the most powerful telescope as to the naked eye. And the spectroscope has shown us that such is, in reality, the case.

It has been found in some cases that a given star is approaching us at certain times, at others receding, and at intermediate periods remaining at rest in space so far as we are concerned. These successive phenomena seem to recur with very great regularity, indicating that they are due to some cause that acts continuously. The only plausible explanation is to suppose a star exhibiting the above phenomena to be, in reality, a binary, made up of a visible and an invisible component. The visible component may be regarded as a star of the ordinary kind, while the invisible one must be taken as one of those dark stars whose fires may, perhaps, have burned with a brilliant light in prehistoric astronomical ages, but which have now become quenched in the lapse of cosmic time. We have more than one reason to suspect the existence of such dark bodies in space. And though they have lost their brilliance, they are yet massive as ever and fully capable of exerting gravitational attraction upon neighboring stars. In other words, we may suppose the bright component of a spectroscopic binary to be far smaller than its dark but heavy companion, and, therefore, compelled to revolve about it in an orbit analogous to that of our earth travelling annually around the sun. If this be so, the bright star must alternately approach us and move away from us, according to whether it is in one or the other half of its orbit. This explanation is very plausible, and generally accepted; but it does not exhaust the binary star phenomena revealed to the spectroscope. Sometimes we find an apparently single star giving us two kinds of light waves at the same time, one indicating approach and the other recession. This is explained by supposing that we have to do with a binary in which both components are luminous and both in motion. The two orbits would have the common centre of gravity of the stars as their centre of attraction; and it would accord exactly with the theoretical probabilities of the case to find one of them approaching while the other was increasing its distance from us.

Having thus explained what is meant by spectroscopic binary stars, we come now

to Campbell's important contribution to cosmic theory. As we have said, he has examined three hundred stars, and finds no less than twenty-two binaries among them. Three other stars among the three hundred have been observed as binaries with the great telescope of the Russian national observatory at Pulkowa, near St. Petersburg. Thus, as large a proportion as one-twelfth of these three hundred stars are now known to be made up of more than one component. Since these three hundred stars must be regarded as representing approximately the condition of affairs throughout the whole sky, we are led to the important conclusion that duplicity in a stellar system is not at all an exceptional case. Doubtless, many of the supposedly single stars are in reality double, though the existence of their companions is still concealed from our comparatively powerless instruments. It is, perhaps, too daring to look upon these twin stars as the normal type of cosmic development and to regard our own unaccompanied sun as an exceptional stellar body. But we cannot any longer escape the conclusion that space must contain double suns far more numerous than has been generally supposed. And it is more than probable that some of these are followed by numerous planetary satellites, doubtless threading mazy orbits of incredible complexity under the influence of a double centre of attractive forces.

Stellar Parallax.—The question of the distances of the fixed stars from the earth has received a notable addition this year by the preliminary publication of the heliometer researches of Elkin and Chase at Yale University Observatory, New Haven. Some years ago the astronomers at New Haven undertook to make careful measures of the so-called parallaxes of a certain series of ninety-nine stars; and it should be remarked in passing that the measurement of stellar parallax is only the astronomer's term for the measurement of stellar distances. The reason why those particular ninety-nine stars were selected was because they are affected by what astronomers call large "proper motions"—that is to say, these stars are all moving on the sky in paths peculiar to themselves and by amounts which, though small, are very much larger than similar motions affecting the vast majority of stars. It has been found that each of these ninety-nine stars changes its position upon the celestial vault by an amount exceeding half a second of arc every year, and these are the only stars having a motion of this magnitude. These displacements of the stars on the sky are influenced very much by their distance from us. A motion of ten miles per second would appear very small if transferred to the distance separating us from some of the furthest fixed stars. Indeed, even if the actual motions of the stars were all alike, we should expect to have the motions *appear* greatest for the stars that are nearest to us. Thus, it is fairly safe to take a large apparent motion as an indication of nearness, and it is for this reason that the New Haven astronomers selected for measurement of distance stars of large "proper motion."

But it turns out, after all, that these stars are not very near. In the case of only two of them was it possible to establish a parallax so large as to be beyond suspicion. These two stars exhibit a parallax of one-quarter of a second of arc, which means that the distance between the earth and sun would occupy only that tiny angle as seen from these stars. It will be easier to understand how small that angle is if we remember that a second of arc corresponds to only three-tenths of an inch seen from a distance of one mile. While, therefore, we must regard it as unfortunate that the extensive labors of the New Haven astronomers have not put us in possession of any large parallaxes, we must, nevertheless, set it down as a notable addition to the astronomy of the year that a systematic examination for parallax has been made of all the large "proper motion" stars. And we must conclude that the large size of their motions is due to the enormous magnitude of the motions themselves, and not to an apparent magnification of a small motion, caused by bringing it close to the observer.

Nebula.—For the last year or two preceding his death the late Professor Keeler (*q. v.*), of the Lick Observatory, was engaged in the study of nebulae, using the recently obtained Crossley photographic telescope—the same instrument that has been used in photographing the planet Eros, as described in the present article. Keeler obtained results in regard to the nebulae which he considered the most important work of his life. He was able to take full advantage of the great light-gathering power of his three-foot mirror after he had successfully adjusted the somewhat imperfect mounting of the instrument. Briefly stated, his researches showed, in the first place, that the nebulae are immeasurably more numerous than had been supposed previously; and, in the second place, he found that the prevailing form of the nebulae is spiral. The importance of this discovery in its bearing on theories of cosmic evolution cannot be overestimated. It would appear that a nebula, such as Laplace supposed was the original condition of the solar system—a species of flattened globe of gaseous matter—is an exceptional case, and not at all the rule; the type specimen of the developing world is rather a species of whirlwind.

Some of Keeler's photographs look as if the nebulae consist of a series of very

flexible rods, attached, like the spokes of a wheel, without any rim, to a rapidly whirling axle. It is as though we had to deal with a great cosmic whorl in which the inertia of the spires or some other cause makes the separate volutes trail out into space in a backward curve. It is not desirable to push imaginative theories very far when unsupported by sufficient observational evidence; but future theorists as to cosmic evolution will have to reckon with Keeler's recent photographs. Keeler estimated that if his process of photography could be extended so as to cover the whole sky, he would find no less than one hundred and twenty thousand nebulae revealed to our view upon the photographs. Existing catalogues contain only ten thousand of these objects. We must, therefore, conclude that space is very full of nebulae—possibly they outnumber the stars themselves.

Photography with Visual Telescopes.—When astronomers began to apply the photographic method to the observation of the heavenly bodies soon after the discovery of photography itself, they found that the ordinary lenses of their telescopes were not well suited to produce good photographic negatives. The surface of the photographic plate is sensitive principally to those rays of light that belong to the violet end of the spectrum, whereas the rays of light that affect the eye principally are in the yellow part of the spectrum. Thus, ordinary visual telescopic lenses must be constructed in such a way as to concentrate as much as possible the rays of light that affect the eye and leave the rays of photographic, or so-called *actinic*, intensity more or less disregarded. To meet this difficulty, astronomers and opticians proceeded to make special telescopic lenses for photographic purposes, which were ground to such a shape as to concentrate especially the violet rays required for the photographic plate. The result has been that photographic telescopes are practically useless to look through, and visual telescopes practically useless for making photographs. In some cases an effort was made to use the same telescope for both purposes by providing a visual lens which could be turned into a photographic lens by attaching an additional disc of glass. This latter was so shaped as to correct the visual lens and transform it into a photographic lens for the time being. Some opticians have even succeeded fairly well in making a combination lens which could be changed from a visual to a photographic one by simply taking it out of the telescope and putting it back again in the reversed position. Turning the lens over, so that the light would pass through it the wrong way, made it concentrate blue rays, instead of yellow ones. But this last method of photographic correction has not been found thoroughly satisfactory.

Quite recently experiments have been made at the Yerkes Observatory which seem to indicate that ordinary visual lenses can be used, after all, for photography with eminently satisfactory results. Mr. Ritchie, of that observatory, has tried the plan of inserting in front of the sensitive plate a sheet of plate glass coated with collodion, containing a chemical solution of such a color as would intercept all the rays of light except those for which the telescope lens was especially ground. In this way he hindered those rays of light from getting at the plate which would tend to diminish clearness of the photograph, and allowed only those to reach it which were desired. The loss in this process as compared with the use of a special photographic lens is principally the loss of light in passing through the chemical solution. This loss, however, is of little consequence when we are using a telescope as large as the Yerkes instrument. Its light-gathering power is so enormous compared with any other telescope, that we can afford to cut off quite a little of it and still have a good deal more left than we could get with a smaller lens all of whose light-gathering power was available. Taking advantage of this process, Ritchie has produced several negatives of exceedingly difficult star clusters in which the separate stars are so close together on the sky that it has been next to impossible to separate them in previous photographs. He has also obtained negatives of portions of the lunar surface that seem to exceed in clearness of definition anything that we have yet seen in the way of moon photographs. It has not yet been possible to subject to accurate measurement under the microscope any of these new photographs thus obtained by the interposition of a "color screen;" and until this has been done we cannot be certain that the process can be used for all the purposes of exact astronomy. There is a possibility, at least, that a color screen will introduce slight but appreciable distortions, such as those to which we have referred in the present article under the heading POLAR PHOTOGRAPHY. If there is no such distortion, or if its magnitude and effects can be determined and taken into account by calculation, we have in color-screen photography a very powerful new engine of astronomical research.

Meteor Photography.—We are able to report this year considerable progress in the observation of meteors by photography. It has been known for some time that Dr. Elkin and the other astronomers of the Yale Observatory have been engaged in an effort to observe meteors in this way. An entirely new apparatus of a very ingenious kind has been set up at New Haven, with which it was hoped to obtain valuable results at the expected meteor shower of November, 1899. Unfortunately,

the non-occurrence of this shower at the predicted time made it impossible to make the extended series of photographic observations which had been intended. Nevertheless, a number of sporadic meteors have been successfully photographed, and have demonstrated the satisfactory nature of the new instrument. Briefly stated, Dr. Elkin's method consists in pointing at the sky a number of photographic cameras, all mounted on a stand similar to those used for astronomical telescopes, but so inclined to one another that each will cover a portion of the sky just touching that covered by the neighboring cameras. In this way a large section of the sky can be photographed at once. In front of each camera is then placed a revolving wheel, provided with a series of screens. These wheels are turned very rapidly by means of an electric motor, and the screens interrupt the exposures of the photographic plates at regular intervals of time. These time intervals are carefully recorded automatically by the usual chronographic method of astronomers. If a meteor shoots across the field of view of any camera, it will trace out a line upon the negative; and this line will show interruptions corresponding to the instants of time when the successive screens interrupted the exposure. If instruments of this kind are set up at two stations, separated by several miles, and if one and the same meteor can be photographed at both stations, we obtain the necessary data to determine by a process of calculation practically everything that we wish to know about the meteor. We have the exact instant of time when the meteor occurred, a determination of its apparent course on the sky, a knowledge of the velocity per second with which it is travelling through the atmosphere, and its height above the earth's surface in miles. Dr. Elkin's recent results were presented at the August meeting of the Astronomical and Astrophysical Society of America. Only five meteors had been successfully photographed at the two stations, but the calculations from each of the five are complete and the results very satisfactory. One of the meteors, an Andromedid, observed on November 24, 1899, furnished a meteoric orbit, based on the photographic observations, which resembles very closely, indeed, the known orbit of Biela's comet. It is not too much to say that this photographic method of observing meteors will soon lead to more accurate knowledge than has been obtained by the older method of casual eye observation in the whole period of time since astronomers first began to record their observations.

Planetoids, or Asteroids.—The following is the list of asteroids discovered since No. 444, the last one mentioned in the YEAR BOOK for 1899.

Number.	Temporary Designation.	Discoverer.	Date of Discovery.
445	EX	Coddington	October 4, 1899
446	ER	Wolf-Schwassmann	October 27, 1899
447	ES	" "	October 27, 1899
448	ET	" "	October 27, 1899
449	EU	" "	October 31, 1899
450	EV	" "	October 31, 1899
451	EY	Charlois	December 4, 1899
452	FD	Keeler	December 6, 1899
453	FA	Charlois	February 22, 1900
454	FC	Schwassmann	March 28, 1900
455	FG	Wolf-Schwassmann	May 22, 1900
456	FH	" "	June 4, 1900

Five asteroids were discovered by Wolf at Heidelberg on October 22, 1900, on the same photographic plate. Their temporary designations are FM, FN, FO, FP, FQ.

Comets.—Three comets were discovered in 1900, all of which were extremely faint. No remarkable appearances were noticed about any of them.

1900 *a* was discovered by Giacobini at Nice on January 31.

1900 *b* was discovered by Brooks at Geneva, N. Y., on July 23. It was also independently discovered by Borrelly.

1900 *c* was discovered by Giacobini at Nice on December 20.

ASTRO-PHOTOGRAPHY. See ASTRONOMICAL PROGRESS.

ASTRO-PHYSICS. See ASTRONOMICAL PROGRESS.

ATHLETICS, TRACK AND FIELD. The history of track and field sports during the year 1900 is one of importance on both sides of the Atlantic. The event of the year was the international games held at Paris during the course of the great Exposition. The information sent to this country concerning the Paris games was at first extremely vague, and it was not until after repeated inquiries and suggestions that American entrants knew under what conditions they were to compete. After these matters had been settled it was learned that the games were to continue through

one or more Sundays, on which great European holiday nearly all the important finals were to be held. The attitude of the games officials appeared to be one of carelessness rather than of ignorance concerning the strong public feeling against Sunday games in the United States, and a prominent British publication records that "the Americans created so much commotion with regard to the Sunday competitions that the whole management nearly collapsed." The question of course was not a religious one, but one which reflected a conservative American opinion. No first-class athletic club of the United States holds open competitions on Sundays; none of the colleges, which supply nearly all the leading athletes, hold Sunday competitions. As it was evident that the Americans were to be the feature of the games, the French officials, so word was sent, gave way, though not until the teams from Princeton, Pennsylvania, Michigan, Chicago, and Syracuse universities had refused to sail if Sunday competitions were held. When our athletes reached Paris they were informed that the entire management had not voted on the Sunday question, and that the finals would be held on Sunday. It was finally agreed, however, that the Americans might have the doubtful privilege of running off the Sunday finals among themselves on the following day. Upon the actual occurrence of the games even this concession was withdrawn. In consequence, some of our best athletes, whose colleges would have forbidden the trip but for the bad faith of the French officials, withdrew from competition, thus cutting down the results achieved by this country. Nevertheless, these results were quite satisfactory. The French government, after having entrusted the games to the official international Olympic games committee, which had so admirably conducted the 1896 meeting at Athens, transferred their control to the Exposition officials. The latter were entirely unqualified for the task, as shown by some remarkable mismanagement, and the award of prizes absurdly inappropriate. The attendance in general was small, the majority of the spectators being Americans.

In spite of all this the games were successful, partly because of the aid given by Baron de Coubertin, the French member of the Olympian committee, in organizing the meet, and because of the notable collection of athletes from all over the world. As to the part played by our own collegians and club-men, it is sufficient merely to record the extent of their victories. Of the 24 scratch events the United States won 18, England 4, France 1, and Hungary 1, and of the 12 world's championship contests included in these the United States won 9, England 2, and Hungary 1. The United States also won 13 second places and 12 thirds. The United States broke 8 world's records and England 1. It should be added that the majority of these records were due, not to the metric distances, in which American and English athletes do not usually compete, but to the undoubted excellence of the winners. The results, as far as America is concerned, were largely due to the system of training which this country has developed, and should prove an object lesson to continental athletes. Previous to the Paris meet some two dozen athletes, representing all but one or two of the American teams, competed in the English championship games, winning 8 out of 12 contests entered. Kraenzlein, University of Pennsylvania, made a new world's record of 0.15 $\frac{3}{4}$ * for the 120 yds. hurdles (on grass). The following is the record of the Paris meet, world's records being starred—World's championships: 100 metres run (109.36 yds.), Jarvis, Princeton, 0.104 $\frac{1}{4}$ *; same time by Tewksbury, Pennsylvania, in semi-final; 400 metres (437.44 yds.), Long, New York A. C., 0.49 $\frac{3}{4}$ *; 800 metres (874.89 yds.), Tysoe, England, 2.01 $\frac{3}{4}$; 1500 metres (1640.41 yds.), Bennet, England, 4.06*; 2500 metre steeplechase (1 $\frac{1}{2}$ miles, 94.03 yds.), Orton, Pennsylvania, 7.34*; 110 metre hurdles (120.30 yds.), Kraenzlein, Pennsylvania, 0.15 $\frac{3}{4}$ *; 400 metre hurdles (437.44 yds.), Tewksbury, Pennsylvania, 0.57 $\frac{3}{4}$ *; 16-lb. shot, Sheldon, New York A. C., 46.03 $\frac{1}{8}$; discus, Bauer, Hungary, 118.02 9-10; running high jump, Baxter, Pennsylvania, 6.02 $\frac{1}{4}$; running broad jump, Kraenzlein, Pennsylvania, 23.06 $\frac{7}{8}$; pole vault, Baxter, Pennsylvania, 10.09 9-10. Remaining scratch events: 60-metre run (65.62 yds.), Kraenzlein, Pennsylvania, 0.07*; 200 metres (218.72 yds.), Tewksbury, Pennsylvania, 0.22 $\frac{1}{4}$; 4000-metre steeplechase (2 miles, 850.44 yds.), Rimmer, England, 12.58 $\frac{3}{4}$; 200-metre hurdles (218.72 yds.), Kraenzlein, Pennsylvania, 0.25 $\frac{3}{4}$ *; standing high jump, Ewry, New York A. C., 5.04 9-10; standing broad jump, Ewry, 10.6 4-10; standing triple jump, Ewry, 34.08 $\frac{1}{2}$; hop, skip, and jump, Prinstein, Syracuse, 47.05 $\frac{1}{4}$; 16-lb. hammer, Flanagan, New York A. C., 167.04; tug-of-war, United States (impromptu team); 5000 metre team race (3 miles, 188 yds.), England, 15.29 $\frac{1}{4}$; Marathon race, 40 kilometres (24.85 miles), Teato, France, 2.59.00.

In this country the most notable performances of the year were made by Maxwell W. Long, of the New York A. C. After the Paris games he toured Great Britain, breaking many local records, and then, on September 29, at Traver's Island, N. Y., made a new world's record for 440 yards, on a circular track, in the time of 0.47 $\frac{1}{4}$. The record for this country had stood at 0.48 $\frac{3}{4}$ since 1881, when the noted Myers

established the time at Stenton, Penn.; the world's record of 0.48½ had been made by Tindall, Cambridge University, in 1889; on October 4, at Guttenburg, N. J., Long established for the same distance on a straight track the world's record of 0.47, held since 1886 at 0.47¾ by Wendell Baker, of Harvard. On September 29, at Traver's Island, John Flanagan, New York A. C., again broke the world's record for the 16-lb. hammer, making it 169.04. He also, in an exhibition, threw 171 feet. On April 25, at Syracuse, N. Y., R. C. Ewry established new world's records of 11.03 and 5.04 for the standing broad and standing high jumps respectively. On April 27, at Philadelphia, Myer Prinstein set a new world's record of 24.07½ for the running broad jump; later Kraenzlein increased the distance to 24.08½, but it was disallowed. A. J. Duffey ran 100 yards in 0.09¾, but no record was claimed owing to the race being run with a strong wind.

The most important annual event in the United States, the championship games of the Intercollegiate Association of Amateur Athletes of America, was held at New York, May 26. There was an unusually large number of contestants of a high grade, but a steady rain prevented the making of many new records, which would probably have been established under better conditions. A team was entered from the University of California. Pennsylvania won with 39 points; Princeton, 25; Yale, 20½; Harvard, 14; Syracuse, 10; California, 8; Cornell, 7½; Williams, 6; New York University, 5. Alexander Grant, Pennsylvania, made a new intercollegiate record of 9.51¾ for the 2-mile run, F. Beck, Yale, one of 44.03 for the 16-lb. shot, and A. Plaw, California, 154.04½ for the 16-lb. hammer. Kraenzlein equalled the intercollegiate record of 0.15¾ for the 120 yds. hurdles, made by him in 1899. The western intercollegiate championships were won by Michigan. The New England intercollegiate meet was won by Williams, 30¾ points; Brown, 28¾; Dartmouth, 20. The tri-collegiate field meeting in New England was won by Williams, 62 5-6 points; Amherst, 47½; Wesleyan, 24¾. The various intercollegiate dual meets were held as usual. Harvard beat Yale, 62½—41½; Princeton beat Cornell, 66—33; Pennsylvania beat Columbia, 76—20; Cornell beat Syracuse; Chicago beat Wisconsin, 71—57; California beat Stanford 10 points to 3. The California team made a tour east, and though defeated by the University of Pennsylvania, Princeton, and Yale teams did good work in these contests and in the intercollegiate meet. The various sectional divisions of the Amateur Athletic Union held their usual meets during 1900, the national championships occurring at New York September 15. Junior championships were held for the first time in connection with this meet. The all-around championship was won in 1900 by Harry Gill, of New York, with a total of 6360½ points.

ATKINSON, EDMUND, physicist, died May 4, 1900, in England. He was born at Lancaster, March 13, 1831, and was educated at Owen's College, Manchester, where he became assistant to Sir Edward Frankland. After studying at European universities he became a private assistant at Oxford, and then science master at Cheltenham College. He became professor of experimental science at the Royal Military College, Sandhurst, and also at the staff college. He was a member of the Chemical Society and the Physical Society, holding positions in both organizations. Dr. Atkinson is best known for his translation into English of important foreign scientific works, among which are numbered Ganot's *Elements of Physics*, Helmholtz's *Popular Science Lectures*, and Mascart's *Treatise On Electricity and Magnetism*.

ATKINSON, Canon J. C., D.C.L., an English clergyman, died at Danby-in-Cleveland, March 31, 1900, in his eighty-sixth year. He was a native of Essex, but for three years was a clergyman in Yorkshire, the local color and much of the history of which county is set forth in his writings. Besides his works dealing with historical topics he wrote several volumes upon outdoor life in rural England which still command public attention. His books include *Forty Years in a Moorland Parish*; *The History of Cleveland*; *The History of Whitby*; *A Glossary of the Cleveland Dialect*; *British Birds and Their Nests*; *Walks and Talks*; and *Play Hours and Half Holidays*.

ATMOSPHERIC ELECTRICITY. See PHYSICS.

ATOMIC WEIGHTS. See CHEMISTRY.

ATWATER, WILBUR OLIN, professor of chemistry at Wesleyan University, Middletown, Conn., who during the year has published several important papers on reforms in the teaching of alcoholic physiology, is the author of a series of researches on the subject of food nutrition which have attracted wide attention. He was born at Johnsbury, N. Y., May 3, 1844, and graduated from Wesleyan University in 1865. He then studied chemistry in the Sheffield Scientific School of Yale University, from which he received the degree of Doctor of Philosophy in 1869.

Dr. Atwater became professor in Wesleyan University in 1873, and was made director of the Connecticut Agricultural Experiment Station, the first institution of this kind in the United States. In 1887 he became the director of the Storrs Experi-

ment Station, and in 1888 founded the office of experiment stations of the United States Department of Agriculture, serving as director until 1891. Since that time he has been a special agent of the Department of Agriculture, and in 1894 was placed in charge of an investigation on nutrition of foods, established by act of Congress. In these researches the respiration calorimeter devised by Professor Atwater and Professor E. B. Rose was employed, and it was shown that the transference of energy in the human body was the same as in other machinery, and that the law of the conservation of energy held good. A number of interesting studies dealing with food economy and dietaries were carried on by Professor Atwater in 1895-96, and the results were published by the Department of Agriculture. Later, in 1900, he made a study of the food of university boat crews and athletes, and obtained some extremely interesting results. Professor Atwater came prominently before the general public in 1899, when he first stated the results of his experiments to determine the nutritive power of alcohol. Using the respiration calorimeter, he ascertained that alcohol received into the human system was oxidized or consumed as other food, and that its potential energy was transformed into heat or muscular power in the same way as the energy of sugar and starch was converted. Professor Atwater of course realized the injurious effect of alcohol upon brain and nerves and in other respects, but he urged that temperance reform and teaching, particularly in the schools, should be accurate from a scientific standpoint. In January, 1900, before the annual conference of the Department of Superintendence of the National Educational Association at Chicago, Professor Atwater made an address on the subject of alcoholic physiology, in which he announced his position as a temperance man, yet protested against the teaching of what is untruthful for the sake of inculcating lessons of self-restraint and good morals. He said that as a result of scientific experiments he believed that the moderate use of alcoholic liquors was not to be generally recommended, and that habitual abstinence was the more advisable course. He emphasized the importance of abstinence for young people, but said that to teach that alcohol was always harmful is a subversion of the truth and most injurious. Before the American Association for the Advancement of Science at its meeting in June, Professor Atwater read a paper describing some of his most recent work, and his investigations are still in progress. Two interesting articles on this subject were published in *Harper's Magazine* for October and November, 1900, while other studies are to be found in bulletins issued by the Department of Agriculture, from which they may be obtained.

AUDUBON SOCIETIES. See ORNITHOLOGY.

AUSTIN DAM. See DAMS.

AUSTRALASIAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. See ZOOLOGICAL SOCIETIES.

AUSTRALIA, a British possession consisting of five divisions, which, under the constitution taking effect January 1, 1901, form, together with the island of Tasmania, the Australian commonwealth. The estimated area of Australia is 2,946,691 square miles, and the population is about 3,550,000. The estimated area of Tasmania is 26,385 square miles, and its inhabitants number about 182,000. In 1895 the total imports of Australia and Tasmania, including inter-colonial trade and bullion and specie, amounted to £44,268,000; in 1899, £63,439,000. The exports for the same years amounted to £55,349,000 and £76,908,000 respectively. In the foreign trade the United States is the most active competitor of Great Britain; of the non-British trade about one-half is with the United States and one-fifth with Germany, which ranks next.

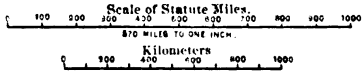
In October the commissioner appointed to report upon the best site for the federal capital had reduced the selection to three places in New South Wales: Eden-Bombala, in the southeast of the colony and not far from the Victorian boundary; Yass, about half way in a southwesterly direction between Sydney and Victoria; and Orange, almost due west of Sydney. The federation project was carried by a large majority of voters, but not by a majority of the electorate, since many did not vote at all. See the following article and NEW SOUTH WALES; QUEENSLAND; SOUTH AUSTRALIA; TASMANIA; VICTORIA, and WESTERN AUSTRALIA.

AUSTRALIAN FEDERATION. The Australian Federation bill, prepared by the premiers of the Australian colonies, and accepted after amendment and exhaustive discussion by the electors of New South Wales, South Australia, Victoria, Queensland, and Tasmania, was submitted to the Colonial Office on March 15, 1900, by the colonies, as represented by their delegates. Mr. Chamberlain, in introducing the bill in Parliament on May 14, stated that the imperial government accepted without reservation every line of the bill dealing with the interests of Australia alone. But the government was unable to agree to the limitations imposed upon the right of



ASIA AND ISLANDS OF THE PACIFIC.

Capitals thus: ● Railroads thus: — Overland Telegraph thus: —

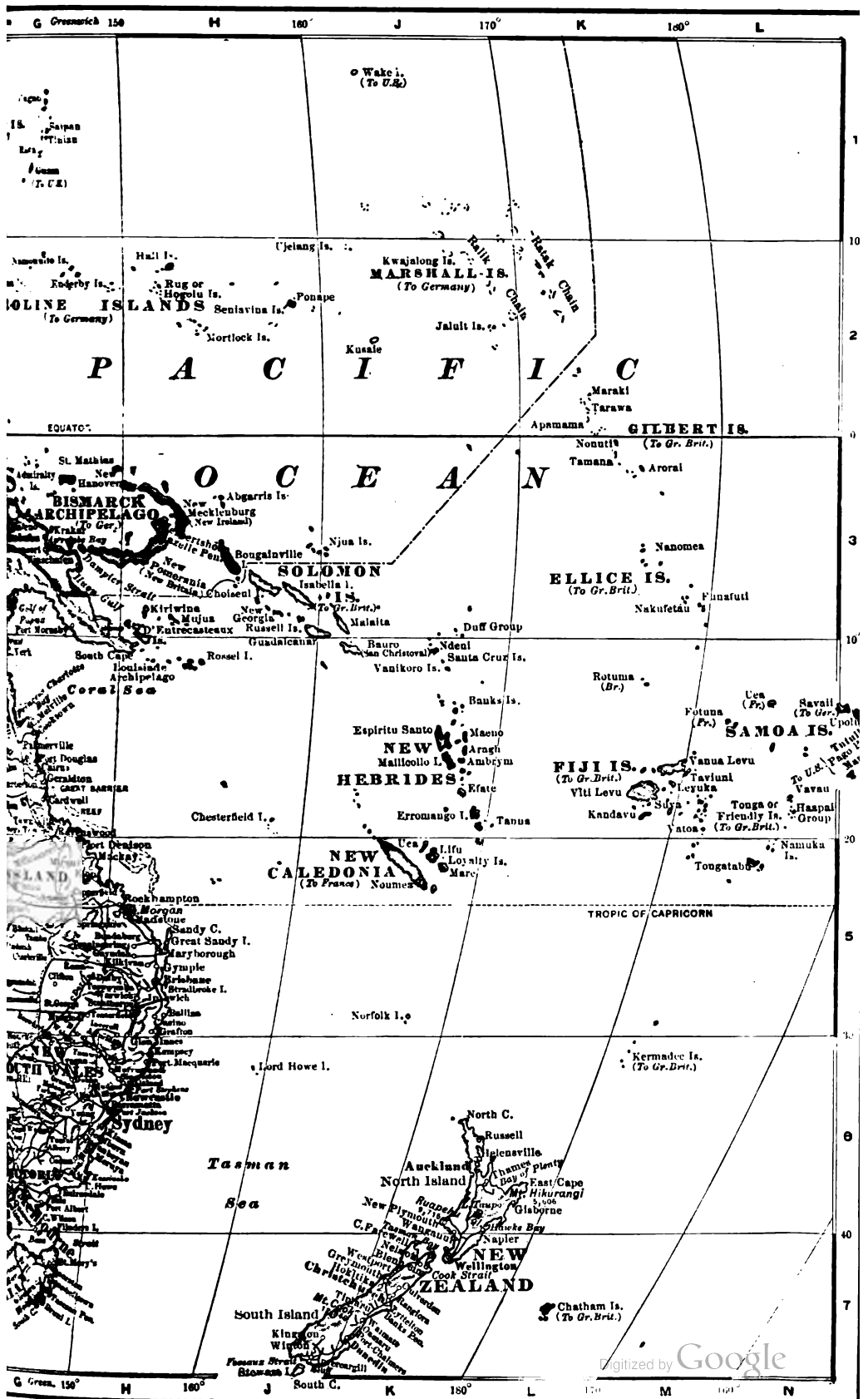


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| British | French | Portuguese |
| Dutch | German | United States |

Comparative Area.



45,215 Square Miles.



appeal by the Australian court to the crown in council, and conferences were being held with the delegates for the purpose of adjusting and compromising the matter. This compromise was eventually reached and embodied in the bill. Mr. Chamberlain also stated that it was hoped that Western Australia, which had not as yet consented to the federation, would consent thereto, and become a charter state. In August, by a referendum vote of 44,704 in favor of the bill, and 19,691 against it, Western Australia did qualify for admission into the commonwealth. In reference to New Zealand, Mr. Chamberlain said that it was believed an arrangement could be made between that colony and the new commonwealth whereby the former could have access to the High Court of Australia, and that joint measures might be taken for self-defence. The home government would also for itself be glad to accede to New Zealand's request that she might at any time within seven years enter the commonwealth with all the rights of an original member. But as this point was, properly speaking, one between New Zealand and the other colonies, the government was forced to accept the latter's adverse decision. In the discussions which followed the introduction of the bill regret was expressed that Mr. Chamberlain had brought up the matter of appeal to the crown in council and had not endorsed the bill as it first stood. The bill was warmly endorsed as exhibiting high statesmanship and as giving effect to a great constitutional scheme, which would give strength and prosperity not only to Australia, but to the British Empire. The bill, as slightly amended, received royal approval on July 9. By it a constitution was provided as follows for the uniting colonies:

Constitution.—The people of New South Wales, Victoria, South Australia, Queensland, and Tasmania (and also of Western Australia) unite "in one indissoluble federal commonwealth under the crown of the United Kingdom of Great Britain and Ireland." This commonwealth is to be formally established by royal proclamation not later than one year from the passing of the act. The executive power of the commonwealth is to be exercised on behalf of the crown by the governor-general and his appointees; the legislative power is vested in a parliament elected in both branches by popular vote; and the judicial power in a high court and such other federal courts as Parliament may create.

Parliament.—The Senate is to consist of six members, or more if Parliament so enacts, from each state, elected for six years, and on one electoral ticket in each state, except that Queensland may form senatorial electoral districts. The Senate may transact business notwithstanding the failure of any state to send her allowed senators; but the seat of a senator who is absent for two consecutive months without permission is declared vacant. Representatives to the House are to be elected by popular vote in each state, and to a number proportionate to the number of inhabitants. The entire number of representatives is to be, as nearly as is practicable, twice the number of senators. At the first election the several states will elect representatives as follows: New South Wales, 26; Victoria, 23; Queensland, 9; South Australia, 7; Western Australia, 5; Tasmania, 5. Representatives are chosen for terms of three years, and, as in the Senate, forfeit their seats by absence. To be entitled to election in either House, a candidate must be 21 years of age, must have qualified as an elector, and must be a subject of the crown resident in the commonwealth for at least three years. But no man may hold office who "has any direct or indirect pecuniary interest in any agreement with the public service of the commonwealth, otherwise than as a member, and in common with the other members of an incorporated company of more than 25 persons." Moreover, a member's place becomes vacant if he "directly or indirectly takes or agrees to take any fee or honorarium (other than his stated salary) for services rendered to the commonwealth, or for services rendered in the Parliament to any person or state." Parliament is to meet at least once every year, and is to be convened and dissolved by the governor-general. No member of one House may be elected to the other.

Powers of Parliament.—The very extensive powers of the Parliament are enumerated in 39 counts. Among the more unusual and sweeping of these powers may be mentioned the following: The control of telephonic, telegraphic and similar services; of state banks extending their operations beyond the limits of a state; of foreign corporations and corporations formed within the limits of the commonwealth; marriage, divorce, matrimonial causes, parental rights, and the custody and guardianship of infants; the control of railways for military uses, and the acquisition by the commonwealth, with the consent of a state, on terms to be decided between them, of any railways within the state; railway construction and extension, with consent of the state; "conciliation and arbitration for the preservation and settlement of industrial disputes extending beyond the limits of any one state." No bills can be originated or amended in the Senate appropriating money or levying taxation. Moreover, all bills imposing duties, customs, or excises, or appropriating revenue for the ordinary expenditures of government, must deal with their respective

subjects and with none other; and Parliament can appropriate money in no case, except upon the previous recommendation of the governor-general. In event that the Senate persists in rejecting or amending a bill passed by the House, so that a deadlock ensues with regard to it, the governor may dissolve Parliament. If, upon reconvening, the House and Senate are still unable to agree, the governor-general may order a joint meeting of the two houses, and the matter at issue is to be determined by a majority vote. When a bill is passed by the Parliament, the governor-general may accept it in the name of the crown, or return it for amendment, or disallow it, or refer it to the crown for determination. In the latter case the bill does not become law unless it is approved by the crown within two years. The crown may also within one year disallow any bill accepted by the governor.

The Executive.—The executive power of the commonwealth is to be vested in the governor-general on behalf of the crown, and in a Federal Executive Council appointed in the discretion of the governor. Ministers of state, having charge of executive departments, are to be members of the Federal Council, but these ministers may not hold office for a longer period than three months unless they are or become members of Parliament. The governor-general is commander-in-chief of the military and naval forces, and is sworn to uphold the constitution and laws of the commonwealth.

The Judiciary.—The judicial power is vested in a federal supreme court, to be called the High Court of Australia, and in such other courts as Parliament creates or vests with federal jurisdiction. The High Court is to consist of not less than three justices, and the justices of all federal courts are to be appointed by the governor-general to serve during good behavior. The High Court is to exercise (1) original jurisdiction in commonwealth cases, and (2) appellate jurisdiction of any other federal court or of any supreme court of any state, or of any court of any state from which at the establishment of the commonwealth an appeal lay to the crown in council. An appeal cannot be taken from the High Court to the crown in council on any question "as to the limits *inter se* of the constitutional powers of the commonwealth," nor can an appeal be taken in reference to the powers of any state, or "as to the limits *inter se* of the constitutional powers of any two or more states, unless the High Court certifies that the question is one which ought to be determined by the crown in council."

Revenues and Customs.—Of all revenue collected by the government, only one-fourth is for ten years to be expended by the commonwealth; the remainder is to be paid over to the states or applied to the interest of state debts assumed by the commonwealth. At the end of two years all customs are to be made uniform; until that time the commonwealth will credit each state with the revenues collected therefrom, and will debit it with debts taken over by the commonwealth and with its share of the governmental expenditures. After two years Parliament alone is to levy taxes and "to grant bounties on the production or exportation of goods." But a state may still offer bounties on mining products, and with the consent of Parliament may give aid to the production and export of other merchandise. Trade and commerce between the states, however, is to be absolutely free. For ten years the commonwealth may, in its discretion, offer financial assistance to any state, and after the end of five years the commonwealth may distribute among the states any and all surplus revenue.

Miscellaneous.—No state religion may be established, nor may any religion be discriminated against. No state may, without the consent of Parliament, maintain any armed force, but, upon application of the state, the commonwealth will protect it from domestic violence. Parliament may, with the consent of a state, alter its boundaries, divide it into two or more states, or form a state from territory within its limits. New states are to be admitted upon such conditions and terms of federal representation as Parliament may determine. An amendment to the constitution must be (1) passed by an absolute majority in both houses, or passed twice in succeeding sessions by one House, and must then (2) receive the affirmative vote of a majority of electors in a majority of states, and also the affirmative vote of a majority of all the electors in the commonwealth. But no amendment diminishing the proportional federal representation of any state, or diminishing the absolute number of its representatives in the House, or affecting its boundaries or its constitutional rights, is to be valid in any case, unless approved by a majority of the electors in that state. The seat of government is to be in New South Wales, but temporarily Parliament will sit at Melbourne.

In accordance with this constitution and with the royal proclamation, the commonwealth was at Sydney, New South Wales, January 1, 1901, declared to be established and in effect. The charter states constituting the commonwealth were New South Wales, South Australia, Western Australia, Victoria, Queensland, and Tasmania. The Earl of Hopetown, governor of Victoria from 1889 to 1895, was in-

augurated as governor-general on January 1, 1901. It was announced that the Duke of York had been commissioned by the crown to open the first session of the commonwealth Parliament at Melbourne.

AUSTRIA-HUNGARY, a monarchy of central Europe, comprising the empire of Austria and the kingdom of Hungary united under one sovereign, Franz Josef I. The capital of Austria is Vienna and of Hungary Budapest; the Delegations, or legislative power common to both countries, convene each year in each of the capitals alternately.

Area and Population.—The monarchy, which is the largest state of Europe except Russia, has a total area of 240,942 square miles, of which Austria comprises 115,903 square miles and Hungary 125,039 square miles. The estimated population of the former in 1896 was 25,249,701, and of the latter 18,550,512, the total being 43,800,213. The estimated population of Hungary in 1899 was 18,730,000. In these figures are included the area and population of the Hungarian province Croatia and Slavonia (*q.v.*), which embraces 16,773 square miles and has, according to the census of 1890, 2,186,410 inhabitants. Upon the basis of language the native residents of Austria were divided as follows in 1890: German, 8,461,580; Moravian, Bohemian, and Slovak, 5,472,871; Polish, 3,719,232; Ruthenian, 3,105,221; Slovene, 1,176,672; Servian and Croatian, 644,926; Italian and other Latins, 675,805; Roumanian, 209,110; Magyar, 8139. Similar figures for Hungary were: Magyar (Hungarian), 7,426,730; Servian and Croatian, 2,611,264; Roumanian, 2,591,905; German, 2,107,577; Slovak, 1,910,279; Ruthenian, 383,392. The largest cities of Austria at the end of 1890 were: Vienna, 1,364,548 (1897, 1,594,129); Prague, 184,109; Trieste, 158,344; Lemberg, 128,419; Gratz, 113,540; Brünn, 95,342. At the same time the principal Hungarian cities were: Budapest, 505,763 (1896, 600,000); Szegedin, 87,410; Maria Theresiopel, 73,526; Debreczin, 58,952; Presburg, 56,048.

Common Government and Finance.—The executive authority of the dual monarchy rests with Franz Josef, who became emperor of Austria in December, 1848, and King of Hungary in June, 1867. The heir presumptive is the Archduke Franz Ferdinand, son of the late Archduke Karl Ludwig, brother of Franz Josef. The present relations of Austria and Hungary date from the "compromise" of 1867, which is of indefinite duration and is based on similar clauses in the constitutions of the two states. In the same year was established the *Ausgleich* (meaning compromise), renewable decennially, and providing for a customs union and a common system of finance. This was renewed in 1877 and 1887, but not in 1897. Pending the result of extended negotiations, however, it remained in force until 1899, when it was superseded by a reciprocity treaty that practically retained its provisions and that is to remain in force until December 31, 1907. But a change was made in the proportion of the contributions paid by the two states. Under the *Ausgleich* Austria contributed 68.6 per cent. of the common expense of the dual monarchy above that met by the customs revenue, and Hungary 31.4 per cent.; according to the treaty of 1899, the former pays 65.6 per cent. and the latter 34.4 per cent. The principal provisions of the compromise uniting Austria and Hungary are as follows: The two states, though under the same sovereign, are independent of each other, and each has its own constitution, legislature, ministry, and administration. In common the government of the dual monarchy deals with foreign affairs, the army, the navy, finance relating to the monarchy as a whole, customs, certain state monopolies, and the diplomatic, postal, and telegraphic services. The emperor-king is assisted by a ministry of three members—for foreign affairs, finance, and war—who are responsible to the common legislature called the Delegations. This legislature consists of 120 members, who are separated into two groups of 60 each, 20 being chosen for each group from each of the upper houses of the Austrian and the Hungarian parliaments and 40 for each group from each of the lower houses. The Delegations, the members of which are chosen annually, convene each year, alternately at Vienna and Budapest. The two groups do not deliberate together, and if the measures adopted by the one are rejected by the other all the members come together and a joint ballot is taken without debate. The composition of the common ministry in 1900 was: For foreign affairs, Count Agenor M. A. Goluchowski; for finance, M. Benjamin de Kállay; for war, General E. von Krieghammer. Count Goluchowski, a Pole, who has been minister of foreign affairs since October, 1895, is regarded as an able diplomat; it is said that "to him more than to any other statesman is due the policy of concert, followed by the six great powers in reference to the Armenian, Cretan, and Greek questions of 1895-97."

The treaty of 1899 provided for a customs tariff in favor of Hungary, which would probably be compensatory for the 3 per cent. advance (mentioned above) in the share of the common expense borne by that country. The common revenue and expenditure, expressed in florins, worth 40.6 cents in United States money, have been reported as follows, the figures for 1899 and 1900 being official estimates.

	1896.	1897.	1898.	1899.	1900.
Customs revenue.....	53,537,000	62,267,000	71,147,000	57,139,000	62,475,000
Assessment of Austria.	69,772,000	74,786,000	75,044,000	75,952,000	.....
Assessment of Hungary	31,936,000	34,232,000	34,350,000	34,766,000	.....
Expenditure.....	155,245,000	171,285,000	180,541,000	167,857,000	172,324,000

Of the expenditure for 1900, about 165,000,000 florins were assigned to the Department of War, about 19,700,000 florins being for the navy. Joint debts are not contracted by the dual monarchy. A debt, however, was assumed in common when the union was effected in 1867, and this in 1899 amounted to 2,722,549,875 florins, the charges being 95,963,877 florins for Austria and 30,310,713 florins for Hungary. In addition there is a common floating debt of about 112,680,000 florins. By a law of 1892 gold was made the monetary standard of Austria-Hungary, and the crown (worth 20.3 cents in United States money), though not a gold coin, became the unit of value. The unit used by the people, however, has been the florin (\$0.406). By an imperial decree of January 1, 1900, accounts must now be reckoned in crowns, and although the value of this coin is exactly half a florin, considerable confusion ensued.

Army.—The military forces of the dual monarchy consist of three bodies—the common army and the national armies of Austria and Hungary, called the *Landwehr* and the *Honvédség* respectively. Each of these forces has a supplementary reserve, and in addition for the forces of Austria and of Hungary there is another reserve, the *Landsturm* (called in Hungary the *Népfölkelés*). Military (or naval) service is required of all able-bodied men between the ages of 21 (or 19 in the *Landsturm*) and 42 years. The time of service is 3 years with the colors in the common army and 7 years in the common supplementary reserve, or 10 years if the first enrolment is in the supplementary reserve. When this service is completed the soldier is transferred to the *Landwehr* or the *Honvédség* for a period of 2 years; he may, however, in the first instance be enrolled in one of these last two bodies, in which case the term of service is 12 years. The last service is for 10 years in the *Landsturm* or *Népfölkelés*. Persons who do not intend to serve in the common army, navy, reserve, or in the *Landwehr* or *Honvédség* are enrolled at the age of 19 in the *Landsturm* or *Népfölkelés*, where they remain until 42 years old. In time of peace the *Landwehr* and *Honvédség* are called out only for instruction and drill. On a peace footing the strength of the active army in 1899 was reported as follows: The common army, consisting of 15 army corps, had 20,780 officers and 283,513 men; of these 10,447 officers and 178,138 men belonged to the infantry arm of the service. The Austrian *Landwehr* had 2661 officers and 25,068 men, the infantry force amounting to 2415 officers and 22,949 men. The Hungarian *Honvédség* comprised 3013 officers and 26,658 men, the infantry numbering 2587 officers and 22,312 men. Accordingly, the strength of the active army was 361,693, of whom 26,454 were officers. On a war footing the number of officers is placed at over 45,000 and the men at about 1,827,000, the total being about 1,872,000. Upon complete mobilization the Austro-Hungarian army, including the reserves, the *Landsturm*, and the *Népfölkelés*, would have a strength of over 3,000,000 men—one authority says over 4,000,000 men. The annual number of recruits to the common army number 103,100, Austria contributing 59,211 and Hungary 43,899. Also each year Austria furnishes 10,000 men to the *Landwehr* and Hungary 12,500 men to the *Honvédség*. The Austro-Hungarian cavalry is unusually efficient. The infantry forces are armed with the Mannlicher rifle.

Navy.—The naval department of the dual monarchy is under the ministry of war. The navy is maintained chiefly for the defence of the Adriatic coast. It has been slow in construction, but in proportion to its size has a high degree of efficiency. Obsolescent vessels are replaced by new ones, and the government intends, within a period of ten years, to increase the fleet to 15 armorclads of from 6000 to 9000 tons, 7 second-class cruisers of from 4000 to 7000 tons, 7 third-class cruisers of from 1500 to 2500 tons, 1500 torpedo gunboats, and 90 torpedo-boats, not including the defence vessels on the Danube. In 1900 the Austro-Hungarian fleet consisted of 6 second-class battle-ships, 2 third-class battle-ships, 7 port-defence vessels, including monitors on the Danube; 2 armored cruisers, 3 second-class cruisers, 8 third-class cruisers, 12 gunboats, 32 first-class torpedo boats, 31 second-class torpedo boats, 8 third-class torpedo boats.

Government and Finance of Austria.—Executive authority is vested in the emperor. Administration of the several departments of government is placed with a ministry of ten members (two being without portfolio), responsible to the Legislature (*Reichsrath*). In accordance with the compact forming the dual monarchy, Austria has no minister for foreign affairs. The president of the ministry and minister of the interior in 1900 (from January 21) was Dr. Ernst von Koerber. The legislative power devolves on the *Reichsrath*, a bicameral body consisting of an

upper house (*Herrenhaus*) and a lower house (*Abgeordnetenhaus*). The upper house consists of adult imperial princes, landed nobles, ecclesiastics of princely title, and persons nominated for life by the emperor for some distinguished service. The last class comprises a majority of the members. The total number of members in 1900 was 255. The lower house consists of 425 representatives elected by popular vote (though some are chosen indirectly) from the seventeen provinces of the empire, for terms of six years. The *Reichsrath*, which is annually convoked by the emperor, deals with all questions relating to Austria that are dealt with by the Delegations—the legislative body for the entire dual monarchy. Each of the provinces has a representative diet (*Landtage*), which deals with matters not reserved for the *Reichsrath*.

The revenue and expenditure, in florins (40.6 cents), have been reported as follows, the figures for 1899 and 1900 being estimates:

	1896.	1897	1898	1899	1900
Revenue.....	737,387,000	868,214,000	719,901,000	760,755,000	792,906,000
Expenditure.....	741,442,000	908,397,000	715,920,000	760,287,000	793,202,000

Besides the deficit shown in the figures for 1900 there were additional uncovered liabilities of 33,340,000 crowns, to meet which a loan was to be issued. In 1899 the Austrian consolidated debt amounted to 1,612,637,421 florins, and the floating debt to 15,164,567 florins—total, 1,627,801,988 florins. The charges—interest and amortization—amounted to nearly 74,797,000 florins.

Government and Finance of Hungary.—Under the king the executive authority rests with a ministry consisting of nine members responsible to the parliament. Like Austria, the kingdom of Hungary has no ministry for foreign affairs. The premier and minister of the interior since February 26, 1899, has been Koloman de Széll. The legislative power for the kingdom (including Croatia and Slavonia) is vested by the constitution in a parliament (*Reichstag*) of two houses. The upper house, or house of magnates, consists of the adult archdukes, landed barons, and princes, certain Roman Catholic and Greek ecclesiastics, representatives of the Protestant confessions, certain judges and other state officers (who are members *ex officio*), life peers appointed by the sovereign, not exceeding 50, life peers elected by the upper house itself, and three delegates sent by the diet of Croatia-Slavonia. The majority of the members are the hereditary peers, who numbered 226 in 1899. The lower house, or house of representatives, is made of 453 members, chosen by popular vote for terms of five years; of the whole number 413 and Hungarian deputies and 40 delegates of Croatia-Slavonia. The *Reichstag* is summoned annually by the king, and deals with such Hungarian matters as are not under the authority of the common government. Croatia-Slavonia has a diet, consisting of 90 members elected for five years. It convenes annually.

The revenue and expenditure in florins (40.6 cents) have been reported as follows, the figures for the last three years being estimates:

	1896.	1897.	1898.	1899.	1900.
Revenue.....	518,453,000	556,964,000	526,498,000	503,303,000	527,257,000
Expenditure.....	515,943,000	548,131,000	524,443,000	503,252,000	526,341,000

In 1898 the consolidated debt amounted to 1,089,033,000 florins, and the total debt 2,444,838,000 florins.

Religion and Education.—There is no state church in either Austria or Hungary, but the emperor-king must be a member of the Roman Catholic Church. Liberty of conscience prevails throughout the dual monarchy, and all religious bodies that have obtained legal recognition have equal rights of public worship. These bodies are as follows, the figures placed after them representing the percentage of the population they represent in Austria and Hungary respectively (according to the census of 1890): Roman Catholic, 79.2 and 50.85; Greek Catholic, 11.8 and 9.64; Greek Oriental, 2.4 and 15.17; Evangelical (Lutheran and Reformed), 1.8 and 19.76; Jewish, 4.8 and 4.18. A few other religious bodies are legally recognized, but their numbers are comparatively inconsiderable.

In 1890 the inhabitants of Austria who could read and write were, in round numbers 13,258,000, while those able only to read numbered 1,031,000 and those not able either to read or write 9,605,000. In Austria elementary education is compulsory; the cost is defrayed almost entirely by the communes. Besides the elementary schools there are *Gymnasias* and *Realschulen*, schools for special subjects, technical high schools, normal schools, and universities and colleges. In 1897 the children of school age numbered 3,896,783, and there were in attendance at 19,565 elementary schools 3,423,683 pupils (or about 88 per cent. of the whole number) under 72,628

teachers. In 1897 the language used in 7576 of the public elementary schools was German; Czech was used in 4845; other Slav dialects in 4978; Italian in 764; Roumanian in 108; Magyar in 3; while in 288 more than one language was used. In the same year there were 190 *Gymnasias*, with 3824 teachers and 58,511 students, and 87 *Realschulen*, with 1720 teachers and 25,895 students. The Austrian government supports eight universities, having with one exception four faculties, of law, medicine, philosophy, and theology. The teachers in these universities in 1897 numbered 1355 and the students 14,862. The largest is the university of Vienna, which had 452 teachers and 5690 students. In addition to these institutions there are numerous theological, scientific, and industrial schools and schools of music and art.

In Hungary there were in 1890, 7,326,372 persons who could read and write, 557,854 who read only, and 9,465,172 who could neither read nor write. As in Austria, elementary education is compulsory. The parishes or communes are required to maintain infant schools, where children between 3 and 6 years may be sent. Besides these schools and the elementary schools there are *Gymnasias* and *Realschulen*, normal, law, and theological schools; industrial and scientific institutions, and universities. In 1898 the children of school age numbered 3,247,457, of whom 2,427,457 (or about 79 per cent.) were in attendance at 18,486 primary schools under 30,257 teachers. In 10,194 of these schools the language used was Magyar; Roumanian was used in 2244; Croatian in 1460; Slavonian in 561; German in 431; and other languages in 130; while in 3466 schools Magyar and some other language was used. In 1898 the *Gymnasias* numbered 171, with over 3000 teachers and 48,500 students, and the *Realschulen* 41, with 868 teachers and 11,700 students. There are two universities in Hungary proper and one in Croatia, having faculties of law, medicine, philosophy, and theology, with about 425 teachers and 7430 students; of these the University of Budapest has about 275 teachers and 5252 students. The universities as well as most of the institutions for higher education are either maintained or subsidized by the state.

Industries.—In both Austria and Hungary agriculture is the leading industry; including forestry, it furnishes employment to nearly half the population in the one state and to over six-tenths of that in the other. The land under cultivation or pasturage (not including the woodlands) amounts to over 18,718,000 hectares in Austria (the hectare equals 2.471 acres) and to about 22,861,000 hectares in Hungary—total, about 41,579,000 hectares. In 1898 the total areas under the leading crops in the dual monarchy were: Wheat, 4,075,000 hectares; rye, 2,916,000; oats, 2,893,000; corn, 2,685,000; barley, 2,183,000; potatoes, 1,685,000; beets, 581,000; the vine, 501,000; buckwheat, 180,000. The woodlands in Austria amounted to 9,787,500 hectares and in Hungary to 8,987,200 hectares—total, 18,774,700 hectares. In both states the government has the care of the forests. The mineral wealth of Austria-Hungary is large, but the mines of Hungary, it is said, are not well worked. In Austria the most important mineral and furnace products, including ores and metals, were valued as follows in florins for 1897 and 1898 respectively: Coal, 78,489,000 and 84,635,000; raw iron, 31,649,000 and 34,303,000; silver, 1,952,000 and 1,885,000; lead, 1,576,000 and 1,790,000; zinc, 1,217,000 and 1,759,000; mercury, 1,190,000 and 1,140,000; copper, 615,000 and 628,000. The total mining and furnace products for Austria in 1897 and 1898 were valued at 135,449,000 florins and 137,324,469 florins respectively. The figures for Hungary in the same year were: Iron, 19,975,624 florins and 23,433,748 florins; lignite, 12,541,026 and 14,022,406; coal, 6,250,648 and 6,822,489; gold and silver, 7,327,247 and 6,342,217; ores containing gold, silver, copper, and lead, 1,163,215 and 1,294,627; lead, 698,683 and 643,451; antimony, 241,667 and 319,963; copper, 118,144 and 82,393; manganese, 9958 and 8348. The total values of the mining and furnace products for the two years were 48,916,320 florins and 53,484,655 florins respectively. Throughout Austria-Hungary there are various factories for the production of metal wares, textiles, spirits, tobacco, sugar, and other manufactures. A strong tendency toward the consolidation of capital is noticeable in Austria, and in the spring of 1900 it was reported that the government had in preparation a general bill governing the formation and conduct of trusts. See TRUSTS.

Commerce.—The estimated values of the imports and exports of Austria in 1899 were 209,817,488 florins and 289,525,692 florins respectively; in 1900, 202,315,020 florins and 320,909,280 florins respectively. Similar figures for Hungary were, in 1898, 632,452,476 florins for imports, and 579,052,596 florins for exports; in 1899, imports, 606,945,096 florins, and exports, 643,018,572 florins.

The special commerce of Austria-Hungary, together with Bosnia and Herzegovina (*q.v.*), under the customs union (*Zollgebiet*), exclusive of the trade in specie and bullion, has been reported as follows, the values being expressed in florins:

	1896	1897	1898	1899
Imports.....	705,800,000	755,300,000	819,800,000	804,435,000
Exports.....	774,000,000	766,200,000	807,600,000	930,796,000

For the eleven months ending November, 1899, the imports and exports amounted to 739,160,159 florins and 858,420,129 florins respectively; by including specie and precious metals these amounts are increased to 756,020,893 florins and 885,783,909 florins respectively. For the eleven months ending November, 1900, the imports were valued at 769,094,617 florins and 872,832,263 respectively; with specie and precious metals the imports amounted to 790,154,111 florins and the exports, 903,383,050 florins. The imports and exports of gold, silver, and bullion in 1897 amounted to about 99,868,000 florins and 51,652,000 florins respectively; in 1898, 23,469,000 florins and 60,956,000 florins respectively. The trade of Austria-Hungary (customs union) with the countries commercially the most important was valued in florins as follows for 1898 and 1899:

	Imports to Austria-Hungary.		Exports from Austria-Hungary.	
	1898.	1899.	1898.	1899.
Germany.....	\$382,421,000	\$399,274,500	\$420,452,000	\$491,436,500
Great Britain*	69,369,000	74,045,500	75,195,000	88,256,500
Russia.....	68,218,000	48,388,500	22,181,000	40,450,500
Italy.....	59,241,000	59,698,500	57,981,000	71,731,500
United States.....	67,139,000	62,472,500	14,454,000	16,082,000
British India.....	42,164,000	48,716,500	16,452,000	18,217,500
France.....	24,441,000	27,696,500	27,170,000	29,914,500
Switzerland.....	25,088,000	27,660,500	32,088,000	35,622,000
Roumania.....	38,359,000	14,144,000	32,958,000	33,007,000
Servia.....	17,159,000	17,988,000	11,022,000	13,108,500
Turkey.....	17,158,000	18,717,000	31,050,000	30,398,500

* And British islands in the Mediterranean Sea.

In 1898 the leading imports to Austria and Hungary were: Cotton, 52,814,000 florins; coal, coke, etc., 40,552,000; wool, 39,400,000; corn, 30,178,000; tobacco, 25,558,000; coffee, 22,468,000; silk, 21,682,000; wheat, 19,840,000. In 1899 the import of cotton amounted to 52,820,000 florins; coal, coke, etc., 34,630,000; tobacco, 26,400,000. The greatest decrease is shown in the imports of grains, which fell off from 73,250,000 florins in 1898 to 16,060,000 florins in 1899. The leading exports in 1898 and 1899 respectively included: Lumber, 99,570,000 florins and 115,610,000 florins; sugar, 67,060,000 and 86,610,000; cattle, 44,500,000 and 55,170,000. In 1898 leather gloves and shoes valued at 24,178,000 florins were exported; eggs, 39,998,000 florins; malt, 24,288,000 florins; colored glassware, 11,006,000 florins. In 1899 the export of grains amounted to 66,210,000 florins.

Communications.—In 1897 there were 10,822 miles of railways in Austria, of which 4700 miles were government lines, 1260 miles were private lines operated by the government, 4862 miles were privately owned and operated. At the same time the Hungarian railways aggregated 9784 miles. In 1898 there were in Hungary 10,137 miles of railway, of which the government lines amounted to 4876 miles, private lines worked by the government 3430 miles, and lines privately owned and operated 1822 miles. The length of the Austrian railways on March 31, 1900, was reported to be 11,282 miles; the Hungarian railways, 10,412 miles and 331 miles in process of construction. The river and canal mileage navigable for steamers is 818 in Austria and 1923 in Hungary. In 1898 Austria had 5883 post-offices, and the number of letters and post-cards sent was 876,556,080; and 5172 telegraph offices, with 32,363 miles of line, comprising 96,580 miles of wire, and the messages numbered 14,158,226. In the same year the Hungarian post-offices numbered 4766, and the letters and post-cards, 250,802,000; the telegraph offices numbered 3026, with 13,675 miles of line having 66,689 miles of wire, and 13,583,618 messages were transmitted. The receipts of the posts and telegraphs in Austria-Hungary amounted to about 20,475,000 florins, and the expenses, 14,796,000 florins.

A Coal Strike.—About the middle of February, 1900, an extensive coal strike, involving from 60,000 to 70,000 men, was started among the miners of the three northern Austrian provinces, Bohemia, Moravia, and Silesia. The strike was for shorter hours and higher wages, and against the rules forcing the men to provide their own light in the pits and to buy the coal used in their homes. Arbitration could not be effected, and in a few weeks an extraordinary demand for coal rendered the economic situation in Austria almost desperate. Coal appreciated in value from 400 to 500 per cent. The output of the districts affected by the strike in 1899 was about 28,000,000 tons, or more than two-thirds the entire production of Austria-Hungary. Some of the employees had eight-hour shifts, but many worked for eleven or twelve hours. The average daily wage paid in 1899 to employees (including women and children) was 77 cents; the average paid to adult miners was \$1.02.

The corresponding figures for 1880 were 50 cents and 65 cents. It should be noted that the average daily output of coal per employee has hardly kept pace with the rising wage-rate, the amount in 1880 being 1.60 tons and in 1899 2.33 tons. The strike caused much suffering among the working people, and provisions became almost exhausted. It came to an end in April, when the men accepted proposals of the mine owners. See STRIKES AND LOCKOUTS.

HISTORY (a) *Austria.*

Cabinet Changes.—The Wittek ministry, appointed on December 21, 1899, was transitional, having been created for the sole purpose of promulgating by decree necessary measures which the *Reichsrath* had refused to consider. On December 31, 1899, an imperial rescript renewed the common budget for four months and the Austrian budget for six months. A number of minor ordinances were issued, and on January 19, 1900, Wittek and his colleagues went out of office. The emperor intrusted the formation of a new cabinet to Herr Koerber, who became premier and minister of the interior; Welsersheimb remained minister of national defence, and Wittek of railways; Boehm-Bawerk became minister of finance; Spens-Booden, of justice; Hartel, of instruction and worship; Call de Kulmbach, of commerce; Giovanelli, of agriculture; Rezek, a Czech, and Pientok, a Pole, were made ministers without portfolios. In character the ministry was not parliamentary, not built, that is, in conformity with existing party lines, in the *Reichsrath*. It was composed in the main of functionaries best suited for carrying on the routine of administration in such times of parliamentary disorder. Fairly neutral in composition, the cabinet contained, nevertheless, a predominant German element, and was, in so far, imperfectly fitted for undertaking the settlement of the language question, which was by far the most important of the ministerial programme.

The Language Conference.—Before the *Reichsrath* met, Herr Koerber called a conference of Czech and German leaders to decide upon some basis of agreement between the two parties. Though the Czechs persisted in their uncompromising attitude the premier imagined that the pressing needs of the country and the deplorable results of three years' continuous obstruction would make a partial reconciliation possible. For three years budgets had not been voted, and the government had been carried on on provisional estimates. Taxes had been collected without parliamentary sanction, and constitutional rights were consequently in danger. Public works had been neglected, agriculture and industry were suffering for lack of legislative regulation. On February 5, the conference met. The spirit in which the delegates assembled showed itself when the Czechs refused to pledge themselves to discontinue obstruction in the *Reichsrath* during the session of the conference. The Radical faction of both parties refused to participate in the congress, and those who did take a share in its work insisted that it should be regarded merely as a great investigating committee, whose action was in no way binding. At the very beginning of the discussion Czechs and Germans split. The former insisted that in debating the problem of the languages, not only Bohemia and Moravia, but Silesia, and, in fact, all territories of the empire where diversity of tongues existed, should be considered. The proposition was unfortunate, in that it tended to complicate matters still more and to increase the magnitude of the problem. In Silesia, for instance, there were not only Germans and Slavs, but also Poles, and the difficulties that would have been encountered in mediating between three nationalities would have been certainly insuperable. The final demand of the Slav delegates was that the report of the conference's action should be acted upon by the provincial diets, a condition which meant, of course, that any policy displeasing to the *Landtag* of Bohemia would fail. The German delegates wished to deal with the situation in Bohemia and Moravia alone, and desired, further, that the Austrian *Reichsrath* should be the one to act upon the projects submitted by the conference. They insisted, further, that a cardinal feature of the conference's action should be the adoption of a single language, as an official medium of intercourse between the central government and the provinces, and among the provinces themselves, and that this official language should be German. Though put forth in a spirit of partisanship the proposition was sound, for German is the only language that can be generally employed in the Austrian empire, the Slavic dialects being too numerous and too diverse for such a purpose. The Czechs, however, unanimously and clamorously refused to listen to such a proposal, and the conference having failed to agree on what was to result from its action, did not begin to act. This seemingly utter impossibility of settling the rivalry between the languages is made more comprehensible if it be recognized that the struggle between the German and Bohemian tongues is only an indication of a far deeper conflict going on between the German and the Slav nationalities for supremacy in the empire. The truth of this was made apparent early in May, on the occasion of the Austrian emperor's visit to Berlin, during the celebration of the German crown prince's majority. Speaking of this visit before the Delegations, Count Goluchowski, minister for foreign affairs,

dilated upon the beneficent results the close *rapprochement* between the two empires was bound to produce, and the fraternal feeling that was growing up between the Germans of Austria and of Germany. The statement infuriated the Slavs. They denounced Goluchowski, declared the Triple Alliance pernicious, and in the conference repelled all attempts at conciliation. They were supported in their position by the clericals, who naturally hate Protestant Germany. Despairing of even the slightest result, Herr Koerber dissolved the conference in May.

The *Reichsrath* had met on February 22, and gone to work in a surprisingly docile manner. The conservative Czechs had decided to abstain from obstruction pending the sitting of the conference. Some legislative business was done. The Recruits Enlistment bill was passed, the Austrian representatives to the Delegations were elected, and measures were discussed in connection with the strike of the coal miners in Bohemia. When the chamber adjourned for the Easter vacations on March 18, the quietest session in three years had been held, and there were prospects of permanent peace. When the Chamber reassembled on May 8, the prospects had entirely disappeared. The affair of the royal visit to Berlin mentioned above had occurred, and the Czech deputies, 62 in number, came back more irreconcilable than ever. Before the opening of the session Herr Koerber had appealed to the Bohemian leaders to refrain from obstruction, but they had refused. On the first day the Czechs poured in thousands of petitions, and since, according to parliamentary procedure, all petitions must be read before any legislative action is broached, it meant that there was no hope of anything being done. The *Reichsrath* was swamped for another year. Party lines were changed considerably early in May. The Poles and conservatives, who had hitherto acted with the Czechs, went over to the ministry, disgusted with the former's tactics, which threatened the economic ruin of the monarchy. On the other hand, the southern Slavs made common cause with the Bohemians, and, in spite of the general shifting of positions, the government remained as helpless as ever.

A New Language Bill.—On May 8, Herr Koerber submitted to the Chamber a bill providing for the settlement of the language question, and, though the disorderly opposition prevented the bill from coming even to a first reading, its provisions are important as illustrating the complexity of the problem. The bill provided that Bohemia should be divided, according to ethnological conditions, into three regions, German, Czech, and mixed. According to the bill, any district wherein the less numerous of the two nationalities fell below 20 per cent. of the total population, was to be classified as exclusively German or Czech, as the case might be. According to these categories, then, there were 121 Czech districts, with a population of 3,141,000; 80 German districts, with a population of 1,795,000, and 19 mixed districts, with a population of 367,000. In the exclusively German or Czech districts, German or Czech was to be the only language used by the tribunals and all state employees, whether for internal communication or external correspondence. In the mixed districts, judicial cases and administrative affairs were to be conducted in the language preferred by the plaintiff or petitioner. Finally, it was provided that a German functionary in Czech districts, and a Czech functionary in German districts, should be specially appointed to protect the mute minority. In Moravia the mixed conditions were to prevail entirely.

Disturbances in Chamber.—All through the month of May the Czechs persisted in their violent tactics, blocking all action. The ministry had hit upon the plan of holding continuous sessions for days, with the object of physically tiring out the howling Czechs, but the latter met the move by organizing themselves into relays of 15, which relieved each other at intervals and kept up the endless chain of clamor. The climax came on the evening of June 8. The daily scenes had become so scandalous that the ministers were deliberating the advisability of closing the session. From where they sat they could hear the hall of the chamber resounding with the shouts of parliamentarians and the banging of desk covers. The enthusiasm grew. An anti-Semite struck a Czech, and the Czech retaliated. A free fight was in progress, when Herr Koerber rushed to the palace, aroused the emperor at midnight, and procured an order of prorogation. At 12.45 A.M., on June 9, the Chamber was adjourned. On September 7 it was dissolved, and elections for a new Chamber were set to begin December 4, and end January 15, 1901.

Danger to Constitutional Government.—The failure of the Koerber ministry to restore parliamentary order in Austria was a serious blow to the cause of constitutional government in the monarchy. Practically the country had been under absolute government for a year, and the prolongation of parliamentary disturbances meant the prolongation of autocracy. Under paragraph 14 of the constitution the crown may legislate by decrees and ordinance in times of crisis. But a continuous crisis, it was feared, might lead to the suspension of the entire constitution. Indications of a tendency in that direction were not wanting in 1900. Immediately after the prorogation of the Chamber an imperial decree extended the validity of the Austro-Hungarian quota for a year, and the Austrian budget for six months. There were many who advocated that another imperial decree should lay down a course of pro-

cedure for the Chamber, of which the principal feature should be the vesting of power in the president to call in the military to quell disorder. In an address to the country the ministry appealed to the electors to decide whether or not parliamentary government should continue a farce, and constitutional government an impossibility. But the ministry itself did not expect the new parliament to differ in any way from the old one, and the elections were regarded as the last chance given to popular government to redeem itself before absolutism stepped in and took charge of affairs. The constitutional spirit, however, is so weak in most parts of the empire, and the tendency toward decentralization so great, that the different nationalities are most apt to neglect the warning. Thus the year in Austria closed in political confusion, and with a gloomy outlook for constitutional government.

In consequence of his marriage with the Countess Chotek, Prince Franz Ferdinand, heir presumptive to the throne, renounced all claims of his children by the Countess Chotek to the crown of Austria. This was done in accordance with the family law of the Hapsburgs, that a marriage contracted by a possible incumbent of the throne with a woman of lower rank than that of archduchess is morganatic.

(b) Hungary.

Industrial Development.—During 1900 the struggle between the Agrarians and the commercialists formed the most important economic and political feature of Hungarian history. Predominantly an agricultural country, Hungary of late has undergone a healthy industrial development. The landowning classes have regarded the rise of the new commercialism with disfavor, and, anxious to retain their supremacy in the state, have taken vigorous means to combat the growth of industries. The conflict between the two parties was reproduced during the year in the cabinet, where the minister of commerce, an advanced economist, was opposed by the minister of agriculture, who was a strong Agrarian. A great source of complaint with the agriculturalists was the speculation in futures, which it was claimed tended to promote reckless methods of cultivation and establish high prices. Combinations among the manufacturers in the different industries were also bitterly criticised; but the minister of commerce defended them on the ground that they could do no harm because of their comparative weakness, and did much good in preventing cutthroat competition, and furthering economy of production. The Agrarians succeeded in passing a law taxing Bourse operations, more as a matter of principle than for the sake of deriving income, and to give the farm-hand advantages over the artisan, they established aid societies for agricultural laborers and domestic servants. The commercialists gained what was considered an important point in having a law passed exempting from military service all citizens engaged in the promotion of the foreign trade of the country. On September 16, a congress of the Hungarian Chamber of Commerce met at Miskoltz to adopt a plan of defence against the Agrarians. A merchants' association was organized and a permanent committee established for the purpose of advancing the interests of commerce. Resolutions were adopted declaring that the custom policy of the country should be regulated by treaties with different nations and not by arbitrary tariffs created and abolished at will; that commercial treaties should be made for long periods of time, and include a favored nation clause; that the association exert its utmost power at the coming election to send to the *Landtag* men of enlightened views on commerce and industry.

Catholic Agitation.—Though not so strong as in Austria, the Catholic party in Hungary is an important factor in politics, and during 1900 showed considerable activity. At Agram, in January and February, a congress of priests and laymen deliberated on plans for furthering "Catholic autonomy." The phrase is expressive of a double movement. On the one hand there is an attempt to exclude the state from interference in the material affairs of the Church; on the other, a tendency to admit laymen to a share in the administration of these affairs. A small party of extremists at the congress were opposed to the second feature, but were voted down. A committee was appointed to formulate a scheme of party action.

Among the important measures passed by the *Reichstag* during the year were a law regulating the hours of work for laborers on canals and railroads, and a law fixing the subsidies granted by the state to the national industries. On March 15, the City Council of Budapest established a central bureau to provide working men with employment. The institution is modelled on the *Bourse de Travail* at Paris, but is composed of employers and working men. On January 1, 1900, a new code of criminal procedure came into effect, of which the chief features were the establishment of oral trials, and the extension of the right of trial by jury to many offences. Hitherto the jury sat only in cases involving the press. In the matter of the marriage of Prince Franz Ferdinand and his consequent renunciation, the Hungarian *Reichstag*, while confirming the cession of his children's rights, declared that it sanctioned the prince's action, not because it was a family law of the Hapsburgs, a thing to which they attached no value, but because it was in accordance with the pragmatic sanction of Charles VI., which had become the law of the land. See *ARCHÆOLOGY* and *CENSUS*.

AUTOMOBILE CLUB OF AMERICA, organized 1899, to furnish a means of recording the experience of those using motor vehicles, or automobiles; promote investigation in the development of motor carriages; arrange pleasure runs and road contests; co-operate in securing rational legislation and rules governing the use of automobiles; maintain, when menaced, the rights and privileges of self-propelled pleasure vehicles; encourage good roads; and generally to maintain a social club devoted to the sport of automobilism throughout the country. First annual dinner held April 2, 1900, at the Waldorf-Astoria, New York, to General Miles and members of the commission on the construction of a national highway. Exhibition of automobiles and accessories held at Madison Square Garden, New York, November 3-10, 1900. Secretary of club, Homer W. Hedge, 120 Broadway, New York City.

AUTOMOBILE FIRE ENGINES. See FIRE PROTECTION.

AUTOMOBILES. The year 1900 saw but little departure from the lines of mechanical development which distinguished the work of motor-vehicle design and construction of the previous year, and which were outlined in the YEAR BOOK for 1899. The motor vehicle of 1900 was, however, a better and stronger vehicle than that of 1899, and it became better known to the public. One result of this increased popular interest has been to develop a demand for a more reliable and durable vehicle than manufacturers are now placing on the market. The nature of this feeling is excellently illustrated by the following quotation from an article by Mr. Albert C. Bostwick, the first vice-president of the Automobile Club of America: "Far-reaching improvements must be made before the automobile shall have become a practical vehicle for the general riding public. To-day its cost is too great; not only the cost of the machine itself, but the cost of its maintenance and operation. No motive power has been found that is not without important, if not vital, disadvantages. Stability and speed have not been successfully combined. There is no automobile on the American market that is even reasonably reliable for general roading. What I mean by this statement is, that one cannot find a machine in which he can set out for a 25 or 50-mile ride over ordinary roads with a fair certainty that he will reach his destination on time and in good condition." Despite criticisms of this nature and the feeling by unprejudiced students of the motor vehicle that they are substantially just, the mechanically propelled road vehicle was never more firmly established in public favor than at the close of 1900. It is thought by many, indeed, that one of the most definite assurances which we have that this popular favor will remain, is the fact that the public is taking a more sane view of the ultimate field of greatest utility for the automobile, and are relegating the mere racing machine and the frail, fair-weather, smooth-road vehicle to the restricted fields to which they belong. Perhaps the best notion of the work done in the field of the motor vehicle can be given by describing briefly a few of the noteworthy vehicles turned out during the year, with such comparisons and comments as experience seems to justify.

In the YEAR BOOK for 1899 attention was directed to the development in England of the heavy steam wagon or truck for freighting purposes. English builders continued to lead during 1900 in the development of this class of motor vehicles, and, following their lead, American builders turned their attention in a number of instances to the production of similar vehicles. One of the most notable of these was the steam express wagon designed for the use of the Adams Express Company, by its mechanical engineer, Mr. Arthur Herschmann. This wagon has a total weight ready for operation of about four tons, and is designed to carry three tons of paying load at a speed of five miles per hour. The boiler is of the water-tube type and very strongly built, and supplies steam to a horizontal compound engine, with 4x8x6-inch cylinders, capable of developing about 20 horse-power. This engine drives a crank-shaft which gears with a counter-shaft having pinions meshing with internal gears on the rear wheels. The boiler is mounted over the forward axle in the front end of the wagon, but all the driving machinery is carried by the main frame underneath the body of the wagon. In a paper describing this wagon, read by Mr. Herschmann before the American Society of Mechanical Engineers, the following interesting comment is made regarding the future of the steam freighting wagon: "I believe that if the motor wagon is given an unobstructed field and 'fair play' it will hold its own and oust the horse-drawn truck in short order. The change must come, and with perhaps the exception of the harness-maker, everybody will benefit by it. The main trouble seems that educated engineers have so far had little encouragement given them to develop the motor wagon, and that the confused efforts of amateurs and stock-jobbers have drawn the attention of almost everybody to their work, except that of the transportation community, who had no accurate data before them to judge of the practicability of the motor wagon."

Another heavy steam vehicle, likewise of purely American design, but intended for passenger instead of freight traffic, was built during 1900 by the New York Motor Vehicle Company. This was a 20-passenger omnibus. The boiler used was of the

familiar Climax water-tube type, using kerosene spray as a fuel. The engine was a vertical compound machine with cylinders 4x5-inches and 7x5-inches, working normally up to 8 horse-power, but capable of developing 20 horse-power. The driving mechanism consists of a chain from the engine-shaft to a counter-shaft, and two chains from the counter-shaft to the rear wheels. The bus has a total weight of 3½ tons ready for service. At this point it may be interesting to compare with this vehicle the 20-passenger omnibuses built by the Riker Motor Vehicle Company for the Union Motor Transportation Company, of Wilkesbarre, Penn. Three of these vehicles were put in operation on December 3, 1900, and between that date and December 11 they ran about 15 hours a day, making trips over a mile and a half route every 15 minutes, and carried about 4447 passengers. Like all Riker vehicles, they use electric power, the current being supplied by a storage battery to double motors mounted on the rear axle and braced to the reach. During 1900 this company also built a 5-ton and a 2-ton truck. These vehicles are probably the heaviest electric vehicles which have been built, European makers having turned out nothing heavier than cabs, most other American makers having limited themselves in weight and size to delivery wagons. Returning to steam vehicles, it is of interest to note that during 1900 the Thornycroft patents in America for steam freight wagons were secured by the Cooke Locomotive Works, of Paterson, N. J., which have already constructed several vehicles. One of these the company has had running for about three months between its plant and the freight houses, with general satisfaction, it is stated.

In Europe several makers have turned out freighting wagons, using gasoline engines as the motive power, but so far the largest gasoline vehicles made in America have been delivery wagons. Of these the wagon made by the American Daimler Company is particularly notable. In the general arrangement of its propelling machinery this vehicle follows the Daimler models of Europe. The two-cylinder vertical engine of the Daimler type is mounted under a hood at the front end of the wagon, forward of the dash, with the power transmitted through a conical friction clutch and longitudinal shaft to a change gear case, whence a pair of bevel gears, a counter-shaft, and two sprocket chains make connection with the wheels. The frame of the wagon is entirely of metal, and the wheels are of wood, with solid rubber tires, and the two pairs of wheels are 36 inches and 46 inches in diameter respectively. All the mechanism except the engine and the operating wheel and levers is beneath the frame. A considerable number of steam and electric delivery wagons have been turned out by American manufacturers during 1900. In fact, of the motor vehicles for business the delivery wagon has received the most thorough and practical test in this country. Regarding their success, there is a considerable difference of opinion among their users; some assert that they excel the horse-drawn delivery wagon in all points, and others state that as an advertisement they probably pay, but they cannot compete with the horse-drawn vehicle in rapidity and economy of service. It is worthy of note here, perhaps, that the large New York dry goods firm of Altman & Co. have a number of electric delivery wagons in regular operation. The largest of these built in 1900 is a truck for delivering heavy articles. This truck weighs 6000 pounds, and will carry a load of two tons at a speed of seven or eight miles per hour. A storage battery of 44 cells furnishes current to 2 horse-power motors geared to the rear axle.

The commendation of the automobile for war purposes by Lord Roberts has attracted considerable attention to this phase of usefulness of the motor vehicle. The most notable attempt among American builders to supply an automobile for military purposes was made during 1900 by the Mobile Company of America. The wagon designed and exhibited by this company is guaranteed to carry 1000 rounds of ammunition, 4 riflemen, 4 rifles, 2 intrenching shovels, 4 pairs of blankets, and 2 rubber shelters, with enough oil fuel to cover 200 miles. It is stated that the builders guarantee this wagon to cover 100 miles between sunrise and sunset over average country roads or the unbroken prairies of Nebraska. In the South African War much use was made of traction engines during the active operations of 1900, and their service was so exceedingly satisfactory that it turned the attention of many of the English army officers to the possibility of developing motor vehicles of lighter construction, adapted to accompany infantry and cavalry, and carry much of the *impediments* now carried by the men and horses themselves.

The great number and variety of light vehicles made for personal use renders impossible any individual description. In Europe gasoline motors led all others in popular favor in 1900, as they have previously. There are few electric vehicles turned out in Europe, and still fewer light steam vehicles. In America the three kinds of motive power stand on nearly an equal basis in public favor. The distinctive characteristic of American automobile practice is its extensive development of the light steam vehicle. As now generally designed, the propelling mechanism for these vehicles consists of a vertical cylindrical fire-tube boiler, using gasoline fuel, and supplying steam to a double cylinder, double-acting engine, with a chain-drive to the rear

wheels. Water-tube boilers and compound engines are very exceptional, there being only two examples of each found among the two-score, perhaps, of steam vehicles exhibited at the 1900 exhibition of the Automobile Club of America, in New York City. Next to light steam vehicles America is noted for its extensive development of the electric vehicle, American manufacturers taking front rank in the number and variety of these vehicles which they have put on the market. In America, however, as in Europe, the manufacturers of gasoline vehicles exceed in number those of either electric or steam vehicles. Of about 30 firms represented at the exhibition mentioned above 16 were makers of gasoline vehicles.

During the year 1900 there was a vigorous growth of automobile clubs throughout Europe and America. A very large percentage of these were, of course, local organizations. The Automobile Club of England, the Automobile Club of France, and the Automobile Club of America (*q.v.*) are societies of national scope, and are doing much to advance the use of the motor vehicle through tests, races, and exhibitions.

AVA, Earl of, ARCHIBALD LEOPOLD TEMPLE BLACKWOOD, died January 11, 1900, of wounds received at Ladysmith in the Anglo-Boer War. He was the eldest son of the Marquis of Dufferin and Ava, one of the most famous of the living British diplomats. Born July 28, 1863, Lord Ava was educated at Eton and Oxford, and entered the army as a lieutenant in the Seventeenth Hussars.

AVERRELL, General WILLIAM WOODS, a prominent cavalry leader of the Civil War, died at Bath, N. Y., February 3, 1900. Born in Steuben County, N. Y., in 1832, he entered the Military Academy at West Point, graduating in 1855. He served with distinction against the Indians, and after the outbreak of the Civil War was appointed to a colonelcy in the Army of the Potomac. He became conspicuous by a series of raids which he began in March, 1863, and in the following February was placed in command of the second cavalry division. He was wounded in a skirmish at Wytheville. In 1865 he resigned from the army, and the next year was appointed United States consul-general at Montreal, where he remained for three years. He was reappointed to the army in 1888, and then retired. Before and after this time he was interested in manufacturing, turning his attention especially to asphalt paving, and in June, 1898, after a litigation pending for seventeen years, he was awarded by the Appellate Division of the Supreme Court nearly \$700,000, as the result of a suit instituted by him against Mr. Amzi L. Barber, of the Barber Asphalt Paving Company.

AYVASOVSKY, IVAN CONSTANTINOVITCH, a distinguished marine painter and professor in the Imperial Academy of Beaux Arts at St. Petersburg, died at Theodosia, in Crimea, May 1, 1900. He was born in that town July 7, 1817, and after studying at the Imperial Academy, St. Petersburg, and under the artists Tanneu and Sauerweid, he travelled widely through Europe and the Orient. In 1848 he became a member of the Academy of Beaux Arts of Amsterdam. He received the decoration of the French Legion of Honor in 1857. After 1874 he lived in his native town. A large number of Ayvasovsky's paintings, most of which are marine views or naval battles illustrative of Russian history, are now in various art galleries in Russia. Among his famous works are: "A Landscape by Moonlight in the Crimea," "Sunrise in Venice," "Sunset on the Black Sea," "A View of Kiertch," "Sunrise on the Sea," "The Creation," "The Flood," and "Constantinople by Moonlight." Ayvasovsky probably had a wider reputation than any other contemporary Russian painter except Vereschagin. He was a brother of Gabriel Ayvasovsky, the orientalist.

AZORES, a group of islands in the Atlantic Ocean, west of Portugal, are regarded as an integral part of that kingdom, and are represented in the Portuguese Legislature. Their area is 1005 square miles, and their population in 1890 was 255,594, a decrease of about 4200 since 1878. The capital and chief town is Ponta Delgada (population over 16,000), but the usual residence of the governor is at Angra (population 1200), in the island of Terceira. The inhabitants, who are Portuguese and Spaniards, are for the most part very poor. There is a considerable trade in fruit, especially in oranges. In 1897 the imports and exports, together with those of Madeira, amounted to \$1,165,558 and \$1,324,632 respectively. In 1899 a new mail service was established between the islands and the United States, and early in 1900 it was announced that a railway had been projected to connect Ponta Delgada, the Fumas Valley, and the town of Ribeira Grande.

BABYLONIA. See ARCHÆOLOGY (paragraph Babylonia).

BACHELLER, IRVING, an American author, was born at Pierpont, N. Y., September 26, 1859, and for a number of years has been a journalist connected with the press of New York City. He was at one time proprietor of the *Pocket Magazine*, in which was published much of the tentative work of the late Stephen Crane. Already he was the author of *The Master of Silence* and *The Still House of O'Darrow* when, in 1900, his well-known *Eben Holden* joined battle with *David Harum* for

the highest sales of the year. It was announced that a new story by him would appear in serial form under the title of *D'ri and I*.

BACTERIA. See **LIGHT** (paragraph **Microbe Light**); **LIQUID AIR**; **PHOTOTHERAPY**; **PLAGUE**; **SANITATION**; **SERUM THERAPY**, and **YELLOW FEVER**.

BADEN-POWELL, ROBERT STEPHENSON SMYTH, British general, was born February 22, 1857, and educated at the Charterhouse, London. In 1876 he joined the Thirteenth Hussars, and served in India, Afghanistan, and South Africa. In 1887-89 he was on the staff as assistant military secretary in South Africa, and received honorable mention for his work in Zululand in 1888. From 1890 to 1893 he was assistant military secretary at Malta, and in 1895 for his conduct as commander of the native levies in Ashanti received a star and was breveted lieutenant-colonel. In 1897 he was promoted to the command of the Fifth Dragoon Guards. At the outbreak of war with the Boers in October, 1899, Colonel Baden-Powell with a force of twelve hundred men was besieged by a large Boer army in the little town of Mafeking, two hundred miles north of the Orange River, on the Bechuanaland frontier. Large stores of provisions enabled the British to hold out with ease till February, when food began to fail and disease broke out among the besieged. Desperate assaults were made by the Boers on December 26, 1899, and May 13, 1900, but were repulsed with great loss, Baden-Powell displaying great ability and imperturbable coolness in the conduct of the defence. *The relief of the town on May 18, after a siege of two hundred and fifteen days, aroused great enthusiasm throughout the empire, and Baden-Powell was made a major-general. In June he commanded in the western Transvaal, and took the important town of Rustenberg. Early in September he was made the head of the South African Constabulary, a force of twelve thousand men, organized for the pacification of the conquered South African republics. General Baden-Powell is a celebrated sportsman and athlete. He has written *Pig-Sticking or Hog Hunting* (1889); *Reconnaissance and Scouting* (1890); *Vedette* (1890); *Cavalry Instruction* (1895); *The Downfall of Prempeh* (1896); *The Matabele Campaign*. See **TRANSVAAL**.

BAHAMAS, a British colony, comprising a chain of 3000 islands and rocks lying off the southeast coast of Florida, has an area of about 5450 square miles. Some twenty of the islands are inhabited, the estimated population in 1891 being 47,565, and in 1900, 54,709, of whom about one-fifth are whites. The most important island is New Providence, comprising 85 square miles with upward of 12,000 inhabitants, and containing Nassau, the capital of the colony, which is a favorite winter resort for Americans and West Indians. The other principal islands are Great Bahama, Abaco, Harbor Island, San Salvador, Long Island, Eleuthera, Mayaguana, Exuma, Acklin's Island, Crooked Island, Watling's Island, Andros Island, and Great Inagua. The colony is administered by a governor, Sir Gilbert Thomas Carter, since 1897, who is assisted by an executive council of 9 members, a legislative council of 9 members, and a representative assembly of 29 members. About 85 per cent. of the revenue is derived from customs duties. The public debt in 1898 was £118,426. Other statistics of finance and statistics of commerce have been as follows:

	Revenue.	Expenditure.	Imports.	Exports.
1897.....	£62,754	£63,405	£186,010	£149,085
1898.....	74,367	64,872	238,336	174,860
1899.....	76,697	68,749	329,196	169,148

Foodstuffs, clothing, and hardware are the principal imports, and the chief exports in order of their importance are sponges, pineapples, sisal fibre, and turtle-shell. Other shells, pearls, and ambergris are also obtained. The sponges taken in 1898 were valued at £105,038; the pineapple export amounted to £24,360. In 1899 sisal was cultivated on about 14,400 acres, and 1,358,682 pounds of the fibre, valued at £16,942, were exported. The tonnage entered and cleared in 1898 was 741,522 tons. Great Britain sends about one-fifth of the imports and receives less than one-eighth of the exports, while the United States absorbs nearly the entire remainder of the trade. The commercial prospects of the islands were never more promising than in 1900, and there was said to be an opportunity for additional capital in the fibre and fruit trades. Statistics of education in the islands in 1898 were: 44 government schools, with an enrolment of 5998 and an average attendance of 4050; 31 Anglican schools, with an enrolment of 1750; 33 private schools, with an enrolment of 716; 11 aided schools, with 981 pupils in attendance. The government grant for education in 1898 was £4500.

BAHR-EL-GHAZAL, a province of the Egyptian Soudan within the British sphere of influence, is a fertile and well-wooded country, lying to the west of Fashoda. The inhabitants, who are a copper-colored race of uncertain origin, num-

ber from 1,500,000 to 2,000,000. The province, along with the rest of the Egyptian Soudan, is under a governor-general, appointed by Egypt with the assent of Great Britain, in accordance with the agreement made by these two governments on January 19, 1899. The products include ivory, gums, and rubber.

BALIZE. See **BRITISH HONDURAS**.

BALKAN PENINSULA in southeastern Europe, lies between the Black and Aegean seas on the east and the Adriatic and Ionian on the west, while its northern boundary may be said to be defined by the Danube River and its tributaries, the Save and Una. Estimates of the area and population of the several parts of the peninsula, exclusive of Greece, whose non-insular area is reported at 20,875 square miles, and population at 1,930,400, have been estimated as follows:

	Square Miles.	Population.
Immediate possessions of Turkey in Europe.....	62,744	5,711,000
Bulgaria (autonomous Turkish principality).....	24,380	2,312,300
Eastern Roumelia (administered by Bulgaria).....	13,700	998,400
Bosnia	} Turkish territory, administered by Austria-Hungary.....	1,568,100
Herzegovina		
Novibazar		
Total Turkey in Europe.....	124,394	10,589,800
Servia (kingdom).....	19,050	2,314,200
Montenegro (independent principality).....	3,630	228,000

Total Balkan peninsula (exclusive of Greece)..... 147,074 13,132,000

See **TURKEY**; **BULGARIA**; **BOSNIA AND HERZEGOVINA**; **SERVIA**; **MONTENEGRO**.

BALLOONS. See **AERIAL NAVIGATION**.

BALLOU, Rev. LATIMER WHIPPLE, D.D., former member of Congress, and a leader in the Universalist denomination, died at Woonsocket, R. I., May 9, 1900, at the age of 89 years. He was once president of Dean Academy, Franklin, Mass., and served as a representative from Rhode Island in the 44th, 45th, and 46th Congresses.

BALUCHISTAN, a country of southern central Asia, lies between Persia and India on the west and east respectively, with Afghanistan on the north and the Arabian Sea on the south. A part of the country is under British control and the rest, though nominally independent, is under British influence. The estimated area is 130,000 square miles, and the estimated population 500,000. The country comprises: Independent Baluchistan, a confederation under the control of the Khan of Khelat, bordering the sea and having an estimated area of 106,000 square miles and a population estimated at about 221,000; the districts of Quetta and the Bolan, each administered by British officials, acting for the khan; several distinct districts formerly belonging to Afghanistan, but now under British rule, and known as British Baluchistan (population about 145,500); and certain territories belonging to Afghan and Baluch tribes. The northern and western boundaries were finally fixed by agreements with Afghanistan and Persia in 1896. The inhabitants are principally Mohammedans. Khelat is the recognized capital, and Quetta the largest city; other important towns are Mastang, Bela, Kozdar, and Kalatak. The Khan of Khelat, who since 1893 has been Mir Mahmud, has an annual revenue, consisting of a subsidy of 100,000 rupees (the rupee being worth about 20.8 cents) from the Indian government, a quit-rent of 25,000 rupees for the Quetta district, and a share of the agricultural products of independent Baluchistan. He has an army of twelve hundred men, and upon emergency could, perhaps, call forth ten thousand irregular troops. As the rainfall is uncertain, the country is not very productive; camel-grazing is an important occupation, and herds of sheep and goats are numerous. Wheat, barley, millet, tobacco, and dates and other fruit are cultivated. Coal occurs in places, and lead, copper, and petroleum have been found. The exports include wool, hides, madder, fruit, and tobacco. Quetta, a point of great strategic importance, commanded by the British, is connected by rail with the Indian system, and a telegraph line extends as far as Khelat. No political relations exist between Baluchistan and other countries, excepting British India, acting on behalf of Great Britain; and it seems probable that the already strong British influence in the country will increase.

The commercial route established several years ago from Quetta by the way of Muski to Persian Seistan is reported a success. It is said that almost all the trade between India, Persia, and Russian central Asia passes over it. The commerce has been increased by the establishment of an English consulate at Seistan, to which Russia also intends to send a consul. The latter is regarded as an indication of Russia's determination to attain commercial supremacy in southern Persia. She has already attained this in northern Persia.

BANKRUPTCY. Previous to 1898 every State had its own bankruptcy law. As the result of long-continued agitation, Congress at last passed the National Bankruptcy act. This law, approved July 1, 1898, and known as the Ray act, provides for a complete and uniform system for the settlement, through the United States courts and referees appointed by them, of all the affairs of bankrupt debtors. Bankruptcy may be voluntary or creditors may compel a debtor to turn over his property to be administered or distributed for the benefit of creditors. In either case the debtor is entitled to a discharge from future liability to his creditors. Trustees are chosen by the creditors or appointed by the court to administer the property. Referees, who are permanent judicial officers, consider petitions, make adjudications, or dismiss petitions and perform other similar functions. But the final proceedings in the compromising or settling of cases—called "composition proceedings"—and the granting of discharges from his debts to a bankrupt are reserved by the act to the United States Court judges. The expenses of the proceedings in general depend on the assets. In ordinary cases the referees receive 1 per cent. on the amount distributed by the court, or one-half per cent. in cases settled by composition. Trustees receive not exceeding 3 per cent. on the first \$5000, 2 per cent. on the second \$5000, and 1 per cent. on all sums above \$10,000 of the total amount paid out by them.

Taken as a whole, this act has been approved by people most concerned. These include the American Bar Association, the National Association of Credit Men, the Commercial Law League of America, and the National Association of Referees in Bankruptcy. It has resulted in greater freedom in the giving of credits; lax or burdensome State laws have been nullified, and greater security and safety is felt in the conduct of credit business. All of the bodies most concerned, however, are urging certain amendments. Thus far they have failed of passage by Congress. The chief changes proposed are the following: Permitting incorporated companies and corporations to become voluntary bankrupts on petition by written consent of the stockholders of one-half of the stock; bankruptcy of corporation not to release stockholders from individual liabilities; forbidding privileges of bankruptcy to one who has obtained property or credit by false pretences, made fraudulent transfers, been discharged in bankruptcy within six years, or disobeyed a lawful order of the court; excepting from discharge in bankruptcy alimony for support of wife or child, or in cases of reduction; increasing compensation of trustees.

BANKS—BANKING. In his annual report of December, 1900, the comptroller of the currency made important recommendations as to the amount and direction of loans which national banks should be permitted by law to make. From investigations instituted by the comptroller it was ascertained that of 370 national bank failures since the organization of the system, 62, or 17 per cent., of the entire number were entirely or largely due to excessive loans made by those banks to their officers or directors. It was shown further that on June 29, 1900, 18,534 national bank directors out of a total of 28,709 were in some way indebted to the banks under their management. The bank stock owned by the borrowing directors amounted to \$114,759,300. The aggregate amount owed by them and by bank officers and employees who were not directors was \$202,287,414. The capital stock of all national banks at this time was \$621,536,461, and the total loans and discounts were \$2,623,512,200. The liability of bank directors and employees was, therefore, equal to 7.75 per cent. of the total loans and discounts and to 32.55 per cent. of the total capital stock. While recognizing that many of these directors' loans were made upon ample security, the comptroller believed that additional restrictions should be made governing them. The comptroller, therefore, recommended that Congress take favorable action upon a bill introduced into the first session of the 56th Congress by the chairman of the committee on banking and currency, and as amended by the comptroller, providing, in brief, as follows: First. That no national bank should loan money to any executive officer or employee, except with the recorded approval of the bank's board of directors or of the executive committee thereof. Second. That no national bank should loan money to any of its directors, except in the manner specified above, or except upon a recorded application, approved by at least two other directors, or except upon an application within a limit of credit previously fixed by the board of directors. Third. That every report made in accordance with law by a national bank to the comptroller of the currency should contain an itemized account of all moneys due, overdue, or to become due, actually or contingently, from all officers, employees, and directors of the bank. Fourth. That no loans should be made to any person or corporation aggregating in amount more than 10 per cent. of the paid-up capital stock of the bank. But the discount of bills of exchange drawn against existing values and the discount of commercial or business paper actually owned by the person negotiating it is not to be considered as money borrowed (present law). Provided, however (proposed amendment), that protected loans in excess of 10 per

cent. of the paid-up capital stock of the bank may be made to an individual or corporation if the total amount so loaned is less than 2 per cent. of the entire assets of the bank. In reference to this last proposed amendment the comptroller stated that the present absolute limitation of a bank's loans to an individual or company was inconvenient and unjust to many banks; and, therefore, and since there was no penalty affixed, the banks did not largely observe it. Out of 3732 national banks, 1575, or nearly two-fifths of the entire number, reported on June 30, 1900, that they had made loans in excess of the amount allowed by law. Hence, the comptroller recommended that infractions of the law be made punishable, and that the law itself be modified in order to meet actual banking conditions. The comptroller reported that in larger communities the resources of banks were in much greater ratio to their capital than in small communities; and for that reason the larger and more powerful banks were, under the law, much more restricted in their loans. The average ratio of resources to capital in the 44 national banks of New York City was given on June 30, 1900, as 17.5 to 1; of the 16 national banks in Chicago as 14.2 to 1; of the 6 national banks in St. Louis as 8.2 to 1; of the 266 national banks in other reserve cities as 9 to 1; while in the 3400 country banks the ratio was but 6.1 to 1. "The law limiting loans to 10 per cent. of the capital, when applied to the 3400 of the smaller communities of the country, as a whole, would allow the loaning of 1.56 per cent. of their total assets to one individual. As compared with this, the banks of the city of New York, on the average, could not loan over fifty-seven one-hundredths of 1 per cent. to any one individual; the banks of Chicago not over seventy one-hundredth per cent. of their total assets; the banks of St. Louis not over 1.21 of their total assets; the banks of other reserve cities not over 1.10 of their total assets." The law, then, allows banks to make loans in comparatively large proportion to their assets in smaller communities where fully protected loans in large amount are difficult to obtain, while in the business centres, where there is a large demand for such loans, the legal conditions therefor are reversed. The proposed amendment, while not allowing material additional liberty to country banks, would give extensions to city banks well within the limits of safety and requisite for their class of business.

In order to strengthen the cash reserve held by national banks, the comptroller recommended that the law permitting banks not reserve agents to consider as cash on hand balances due them from reserve banks to the amount of three-fifths of the reserve fund of 15 per cent. required of such non-reserve banks, be amended so that the non-reserve banks could only consider as cash an amount held for them by reserve banks, to be not greater than one-fifth of the required reserve fund. The comptroller also recommended that the law which authorized banks in smaller reserve cities to keep one-half of their lawful money reserve in cash with central reserve cities be repealed. In support of these recommendations the comptroller stated that the present law, which to a considerable extent permitted banks to represent as reserve what were in effect loans to other banks, was at times productive of unstable and unsafe banking. And in this connection the comptroller instanced financial conditions in the summer and fall of 1899. Interior banks that summer, owing to a small demand for money in their localities, deposited large amounts with their reserve agents in Eastern cities. These reserve banks, recognizing that the deposits might be recalled at any time, and being under the necessity of paying a heavy rate of interest therefor, desired to place the money out upon call loans. But to obtain a sufficient number of call loans they were forced to go to the speculative exchanges. A speculative movement in stocks was immediately created (see TRUSTS), and was carried on with a constantly increasing range of prices until the fall crop moving in the West caused the interior banks to order cash shipped to them against their balances. This demand "resulted in a panic upon the stock exchange of New York, which instantly became a grave menace to the entire business of the country. In the abnormal demand for money created by this panic the ordinary credits to the legitimate business and commercial enterprises of the country were necessarily curtailed by the banks," and for a considerable time they "refused to ship currency in response to demands from banks in the interior, showing, in the extreme test of panic, that the reserve which had been counted as cash by the banks of the country was not, in fact, at all times available to enable them to meet the demands of their depositors." The comptroller believed that the restrictions advocated in regard to the cash reserve would not, as under the existing law, encourage speculative tendencies in money centres to such an extent as to risk at times "the best interests of legitimate business and at the cost of weakening the banking system as a whole by creating too great a disproportion between the aggregate cash resources and aggregate deposit liabilities." In opposition to this plan it was stated that since country banks were forced to pay interest on their capital stock and to their depositors, the requirement that they should keep so much larger a sum locked up in their vaults would work them grave injury. They would be forced to pay a lower rate of interest to their depositors, and as a result many of them would simply transfer their money of

themselves, and without the agency of the banks, to the speculative centres. Thus, the same result as to speculative crises would follow. In this connection it was pointed out that none of the many plans which had been devised to check speculation had availed, eras of industrial prosperity and rising prices always being accompanied or followed by a speculative movement. To this, however, it might be answered that the comptroller was not concerned with a general speculative movement, but only with the part taken therein by national banks. The comptroller, in his annual report, also called the attention of Congress to the fact that national banks whose charters had been renewed in 1882 and subsequently would, under the terms of existing law, be compelled to end their corporate existence and either go out of business or reincorporate at the end of twenty years from the date of the renewal of their charters. Legislation was, therefore, asked for to enable the comptroller to renew for a further period of twenty years all expiring charters.

Banks Organized under the Currency Act.—The Currency act of March 14, 1900 (see the article CURRENCY REFORM), provided for the establishment in small communities of national banks with a minimum capital of \$25,000, and for the increase of the national bank circulation. The secretary stated that since this law went into effect, and between March 14 and October 31, 1900, the comptroller of the currency approved 509 applications for the organization of national banks; of this number, 382 were for banks with capital of less than \$50,000, and 127 for banks with capital of \$50,000 or more. Since October 31, 1899, 383 banks, with a capital of \$20,025,000, were chartered, of which 348 completed their organizations and were authorized to begin business between March 14 and October 31, 1900. Sixty-two of the banks organized subsequent to March 14, with capital aggregating \$4,560,000, were conversions; 123, with capital of \$5,605,000, were reorganizations of State and private banks; 163, with capital of \$7,310,000, were banks of primary organization. Two hundred and forty-nine of the banks organized subsequent to March 14 were with capital of less than \$50,000, the great majority of these having only the minimum capital requirement of \$25,000 and having an aggregate capital of \$6,575,000; and 99 of the banks were with capital of \$50,000 or over, the aggregate capital for this class being \$10,900,000. In the following table, compiled by the comptroller of the currency, and showing the number and size of national banks organized during the year ending October 31, 1900, especial attention is called by the secretary of the treasury to the new banks formed in Texas, Oklahoma, Indian Territory, Iowa, and other middle Western sections, as showing the banking facilities secured in remoter and smaller communities by the action of the currency law.

States.	No.	Capital.	States.	No.	Capital.
Maine.....	1	\$25,000	Illinois.....	27	1,070,000
New Hampshire.....	3	175,000	Michigan.....	5	215,000
Vermont.....	1	100,000	Wisconsin.....	10	805,000
Massachusetts.....	1	100,000	Minnesota.....	17	500,000
Rhode Island.....	1	100,000	Iowa.....	22	920,000
Connecticut.....	5	300,000	Missouri.....	4	335,000
Total New England States.....	10	\$600,000	Total Middle States.....	133	\$5,860,000
New York.....	13	\$1,095,000	North Dakota.....	8	\$300,000
New Jersey.....	8	385,000	South Dakota.....	3	75,000
Pennsylvania.....	44	2,882,000	Nebraska.....	12	335,000
Delaware.....	1	25,000	Kansas.....	18	440,000
Maryland.....	6	295,000	Montana.....	3	125,000
District of Columbia.....	1	25,000	Wyoming.....	5	330,000
Total Eastern States.....	72	\$4,682,000	Colorado.....	2	75,000
Virginia.....	9	\$300,000	New Mexico.....	18	515,000
West Virginia.....	6	305,000	Oklahoma.....	19	675,000
North Carolina.....	2	50,000	Indian Territory.....	19	675,000
South Carolina.....	2	85,000	Total Western States.....	83	\$2,760,000
Georgia.....	4	650,000	Washington.....	2	\$75,000
Florida.....	2	230,000	Oregon.....	1	25,000
Alabama.....	3	150,000	California.....	4	300,000
Mississippi.....	1	25,000	Idaho.....	1	25,000
Louisiana.....	1	50,000	Utah.....	1	25,000
Texas.....	36	1,383,000	Nevada.....	1	25,000
Arkansas.....	1	25,000	Arizona.....	1	25,000
Kentucky.....	8	1,970,000	Alaska.....	1	25,000
Tennessee.....	4	150,000	Total Pacific States.....	7	\$300,000
Total Southern States.....	77	\$5,323,000	Hawaii.....	1	\$500,000
Ohio.....	25	\$1,520,000	Total of United States.....	383	\$20,025,000
Indiana.....	13	495,000			

Under the Currency act of March 14 banks were entitled, upon deposit of money or bonds as security, to take out circulating notes to the full extent of their capital, which on October 31, 1900, amounted in the aggregate to \$632,502,395. On October 31, however, the outstanding circulation amounted to only \$331,613,218, or a little more than half of the amount permitted by law. The amount of bank circulation on March 13, the day prior to the passage of the Financial act, and on October 31, is shown by denominations as follows:

Denominations.	March 13.	October 31.
Ones.....	\$348,275	\$347,562
Twos.....	167,466	167,056
Fives.....	79,810,710	70,363,595
Tens.....	79,878,160	123,068,290
Twenty's.....	58,770,660	88,408,100
Fifty's.....	11,784,150	16,186,900
One hundred's.....	24,103,400	32,889,200
Five hundred's.....	104,000	102,500
One thousand's.....	27,000	27,000
Unredeemed fractions.....	32,409	33,085
Total.....	\$254,026,230	\$381,613,268

In an article in the *Quarterly Journal of Economics*, Mr. Thornton Cooke queried whether considerable additional banking facilities had, as a matter of fact, been supplied to small communities, and whether such facilities as had been supplied were worth the price paid for them. This price, Mr. Cooke believed, was the impairment of the national banking system, which followed as a matter of course from the lowering of the capital required of national banks. "The \$50,000 banks," Mr. Cooke stated, "have not proved so strong as the larger banks, and the \$25,000 banks cannot be so strong as the \$50,000 have been." As a result, "at the first period of depression the national banks will sustain a fall of credit." That permitting national banks to organize with smaller capital had not considerably increased banking facilities was proved, Mr. Cooke thought, by the following considerations: First. A large number of the new banks were conversions from State and private banks. Second. A number of others which posed as of primary organization were, in reality, conversions, being banks which liquidated and then reorganized in order to allow a change of their assets in conformity with the national banking law. Third. By far the larger number of new banks were organized in towns where there were already banking facilities. Fourth. In actually remote and previously bankless communities \$25,000 banks cannot be supported, and little \$10,000 or so State and private banks are instituted. "In every State of the Missouri River group, except South Dakota, the increase of bank capital due to State banks only is greater than the increase due to national banks." The problem still remains, therefore, of uniting abundant banking facilities in small communities with safe banking. Branch banking is suggested as the only solution. To this solution there is the objection that it would antagonize existing interests, and would be looked upon as monopolistic. If, however, each bank was limited to a single State, this objection would be largely obviated. In the following table Mr. Cooke presents a summary of the State and private banks organized in the Dakotas, Nebraska, Kansas, Missouri, and Oklahoma, from March 14 to October 31. Assuming the table to be correct, it is valuable as showing the extent to which smaller banks than are permitted under the national banking law are necessary in small communities.

CAPITAL.	STATE BANKS.		PRIVATE BANKS.		TOTAL.	
	Number.	Capital in thousands.	Number.	Capital in thousands.	Number.	Capital in thousands.
Not over \$5,000.....	48	240	8	40	56	280
" " 10,000.....	40	372	2	20	42	392
" " 15,000.....	8	120	..	..	8	120
" " 25,000.....	8	190	..	..	8	190
" " 50,000.....	1	30	..	..	1	30
Over \$50,000.....	1	100	..	..	1	100
Totals.....	106	1,062	10	60	116	1,112

Banking Resources.—The report of the comptroller of the currency for the fiscal year ending June 30, 1899, gave the total resources of all banks reporting as follows: 3583 national banks, \$4,708,833,904; 6149 other banks, \$5,196,177,381; all banks (9732), \$9,905,011,285. For the year ending June 30, 1900, the assets and liabilities of all banks reporting was given as follows:

	3732 National Banks.	6650 Other Banks.	10,382 Banks.
Loans	\$2,644,237,193	\$3,013,449,827	\$5,657,687,020
United States bonds...	417,667,435	117,461,816	535,129,251
Other bonds.....	356,883,695	1,606,368,535	1,963,252,230
Cash	529,272,823	220,667,109	749,939,932
Capital	621,536,461	403,192,214	1,024,728,675
Surplus and profits....	391,547,835	490,654,957	882,202,792
Deposits	2,550,659,557	4,780,893,692	7,331,553,249
Total resources.....	4,944,165,624	5,841,658,820	10,785,824,444

In the following table is shown the banking power of the world, as estimated by Mr. M. G. Mulhall, for 1890, and by the comptroller of the currency, for 1900. From this table it will be seen that in banking power the United States leads all nations, having since 1890 increased its banking power 150.3 per cent. In estimating banking-power capital, surplus, profits, issues, deposits, and accounts current are included. The figures are given in million pounds sterling.

Countries.	Year.		Increase.
	1890 (in Millions).	1900 (in Millions).	
United Kingdom.....	£910	£1,172	} <i>Per Cent.</i> 28.8
Europe, all other.....	1,037	1,336	
Australia	} 220	283	
Canada			
Cape Colony.....			
Argentina			
Uruguay	} 1,030	{ *2,203 †375	} 150.3
United States.....			
Total.....	3,197	5,369	67.9

*From reports to the comptroller of the currency.

†Estimated for non-reporting banks.

Right of Withdrawal of Deposits.—On February 6, 1900, the New York Court of Appeals handed down a decision reversing the decision of the Appellate Division of the Supreme Court and affirming the right of a director of a stock corporation about to fail to advise a creditor company of that fact, though by the information so imparted the latter company became in effect a preferred creditor. The decision was rendered in a suit brought by the receivers of the Madison Square Bank against the East River Bridge Company to recover from the latter \$50,000 obtained as follows: The president of the bridge company, who was also a director of the Madison Square Bank, learning of the bank's impending failure, signed and caused to be presented to the banking agents of the Madison Square Bank a check for the amount of the bridge company's deposits in that bank. This check, by the rules of the clearing house, was honored on August 9, 1893, although the Madison Square Bank was not opened to its creditors after August 8. The receivers for the bank averred that the \$50,000 in question should be returned to the bank under the New York statute forbidding a corporation which was insolvent or whose insolvency was imminent to transfer any of its property to its officers or to create preferred creditors. The court held, however, that the New York law did not forbid an officer from revealing the fact of a corporation's insolvency; that, on the contrary, it was often his moral duty to reveal such fact in order that contingent creditors might be deterred. There was, therefore, no reason why a director in the Madison Square Bank should not inform the East River Bridge Company of the condition of the bank in which it deposited. But it was certainly lawful for the bridge company to

present its check against the Madison Square Bank with the clearing house agent of that bank. To all depositors was reserved the right to use for their own benefit all available information regarding their deposits and to draw against these deposits at any time. The fact that a director in the bank signed the check of the bridge company was not germane to the case, since he signed it in his corporate, and not in his individual capacity.

Liability of National Bank for Loan Fraudulently Obtained by Officers.—On March 5, 1900, the long pending and often tried suit of the Chemical National Bank of New York against the receiver for the Fidelity National Bank of Cincinnati was decided by the Supreme Court (United States) in favor of the New York bank. The case arose from a loan for \$300,000, obtained in February, 1887, from the Chemical National Bank, by E. L. Harper as vice-president of the Fidelity National Bank. The money was believed by the chemical bank to have been borrowed in good faith by the Cincinnati bank; and the latter bank, in return for promissory notes signed by Harper, who purported to represent it, was credited with \$300,000 on the books of the Chemical National. This money was drawn upon by the Cincinnati bank as occasion required; but that bank received no advantage from the loan, since Harper, in turn, had himself credited with \$300,000 on the books of the Fidelity National. As it appeared that the whole transaction had been conducted without the knowledge or consent of the trustees of the Fidelity National, the receiver appointed for that bank when it failed refused to admit the Chemical National as a creditor. Suit was, thereupon, brought. The court held in its decision that the Fidelity Bank could not disavow responsibility for the money obtained by its vice-president and used by the Fidelity Bank "in its banking business and for its own benefit." The fact that Harper fraudulently caused himself to be credited on the books of the Fidelity Bank was a matter with which the Chemical Bank had no connection, and this, therefore, could not affect the responsibility of the Fidelity Bank to return money "used in meeting its current obligations."

BAPTISTS trace the origin of their church in America to Roger Williams, who was converted to the Baptist faith in 1639. The denomination, comprising thirteen divisions, ranks after the Roman Catholics and Methodists in point of numbers. The Regular Baptists (North, South, and Colored) maintain distinct organizations, though they agree in doctrine, while the other sects have ecclesiastical differences. (1) Regular Baptists (North) have 7415 ministers, 9374 churches, and 973,820 members; (2) Regular Baptists (South) have 12,058 ministers, 18,963 churches, and 1,608,413 members; (3) Regular Baptists (Colored) have 14,351 ministers, 15,654 churches, and 1,864,600 members; (4) Seventh Day Baptists have 119 ministers, 115 churches, and 8991 members; (5) Freewill Baptists have 1619 ministers, 1486 churches, and 85,109 members; (6) General Baptists have 450 ministers, 550 churches, and 28,000 members; (7) Separate Baptists have 113 ministers, 103 churches, and 6479 members. No recent reports for the following bodies have been available, but the last statistics assign (8) Six Principle Baptists, 14 ministers, 18 churches, and 937 members; (9) Original Freewill Baptists, 120 ministers, 167 churches, and 12,000 members; (10) United Baptists, 25 ministers, 204 churches, and 13,209 members; (11) Baptist Church of Christ, 80 ministers, 152 churches, and 8254 members; (12) Primitive Baptists, 2130 ministers, 3530 churches, and 126,000 members; (13) Old-Two-Seed-in-the-Spirit-Predestinarian Baptists, 300 ministers, 473 churches, and 12,851 members. The Baptists control 7 theological schools, with 68 instructors and 1012 students, and have in connection with their denomination many colleges and seminaries. Mission fields, under the administration of the American Baptist Missionary Union, occupy Burmah, Assam, South India, Japan, China, Africa, and the Philippines, where there are 474 missionaries, 928 organized churches, and 105,216 church members. On this work the society expended \$768,884 with gratifying success, particularly in Africa and China, where progress seemed most difficult. There are also missions on the continent of Europe which are conducted on the same basis as the home mission work.

BAPTIST YOUNG PEOPLE'S UNION OF AMERICA, organized in 1891, and made up of young people's societies in Baptist churches in the United States and Canada. The distinctive feature of the union is its educational work along biblical and missionary lines, embodied in its Christian culture courses. President, John H. Chapman; headquarters, 324 Dearborn Street, Chicago, Ill.

BAR ASSOCIATION, AMERICAN, formed in 1878, held its twenty-third annual meeting at Saratoga Springs, N. Y., August 29-31, 1900. The president's address was delivered by Hon. Charles F. Manderson, communicating the most noteworthy changes in statute law made in the several States and by Congress during the preceding year. The annual address was delivered by George R. Peck, of Illinois, on the "March of the Constitution," papers by Richard M. Venable, of Maryland, on the "Growth of Law;" Edward Avery Hariman, of Illinois, on "Ultra Vires Cor-

puration Leases;" and John Bassett Moore, of New York, on "A Hundred Years of American Diplomacy." The association comprises about 1600 of the leading members of the bar in the United States. There are a number of standing and special committees. The principal subjects considered were the revision of the federal judicial system, the working of the bankrupt law, the adoption of uniform State laws on various subjects, the elevation of the standard of legal education, amendments of the patent, trade-mark and copyright laws, etc. President, Edmund Wetmore, New York City; secretary, John Hinkley, 215 N. Charles Street, Baltimore, Md.

BARBADOS, a British West Indian island, which geographically is the most easterly of the Windward group, but which is administered as a separate colony, has an area of 166 square miles and a population of about 190,000. The capital is the port, Bridgetown, having a population of about 21,000. The colony is administered by a governor, Sir James Shaw Hay, since 1892, who is assisted by an executive council and an executive committee, while legislation is effected through a legislative council of nine members and an assembly of twenty-four members, chosen annually by popular vote. The island, which is the headquarters of British troops in the West Indies, has a garrison of about 850 officers and men. Over 156,500 of the inhabitants belong to the Anglican Church, which receives an annual legislative grant of £10,164; the Wesleyan Church is represented by about 14,500; the Moravian, 6,800; the Roman Catholic, 800, which churches also receive legislative grants. Education, which is in good condition, is under government direction; the government grant for public instruction in 1897 was £11,490; in 1898, £11,000. In the latter year, besides schools for secondary and higher education, with some 600 students in attendance, there were 175 primary schools, with an average attendance of about 14,700 pupils. Statistics of finance and commerce are as follows (the figures for imports and exports including bullion and specie):

	Public Debt.	Revenue.	Expenditure.	Imports.	Exports.
1897.....	£409,150	£184,606	£172,551	£1,008,699	£736,163
1898.....	414,000	182,582	175,319	1,058,855	769,231
1899.....	414,000	216,022	207,883	998,006	845,590

It is stated that of the entire area of Barbadoes about 94 per cent. is under cultivation; about 30,000 acres are under sugar culture, the chief industry. Besides sugar the principal exports are molasses and rum, while the leading imports are textiles and food-stuffs, particularly rice and salted meat. The sugar yield in hogsheads has been as follows: in 1896, 49,399; in 1897, 58,600; in 1898, 53,575. In 1898, 1160 tons of manjak, a bituminous petroleum, valued at over £2300, were exported. The fishing industry is of some importance, the value of the annual catch being about £17,000. Barbadoes has 470 miles of roads and 24 miles of railway.

BARBER-SHOPS. Both New York and Boston have added to their sanitary code the regulation of barber shops. The Boston regulations, adopted May 4, 1900, provide that (1) the place of business, together with the furniture, shall be kept, at all times, in a cleanly condition; (2) mugs, shaving brushes, and razors shall be sterilized by immersion in boiling water and after every separate use thereof; (3) a separate, clean towel shall be used for each person; (4) alum or other material used to stop the flow of blood shall be so used only in powdered form, and applied on a towel; (5) the use of powder-puffs is prohibited; (6) the use of sponges is prohibited; (7) every barber shop shall be provided with running hot and cold water; (8) no person shall be allowed to use any barber shop as a dormitory; (9) every barber shall cleanse his hands thoroughly immediately after serving each customer.

In 1899 Michigan passed a law providing for the licensing of barbers in all towns in Michigan of over 10,000 inhabitants. All barbers now in the business may procure a license by paying a fee of \$1, but persons hereafter entering the business must first pass an examination before the State Commission as to their knowledge of the use of disinfecting appliances as well as of the razor. In 1900 the State of Missouri provided for the appointment of a similar board of examiners. In Pennsylvania the matter has been taken up by the State Board of Health.

BARBOUR, Rev. JOHN HUMPHREY, A.M., professor of New Testament literature and interpretation in the Berkeley Divinity School, Middletown, Conn., died there, April 29, 1900. Born at Torrington, Conn., in May, 1854, he graduated at Trinity College, Hartford, in 1873, was ordered deacon in the Protestant Episcopal Church in 1876, ordained priest in 1878, and until 1889 was a rector in Hartford. From 1882 until 1889 he was also librarian of Trinity College, and in the latter year was called to his professorship there. He wrote *Beginnings of the Historic Episcopate*.

BARITES. See BARYTES.

BARLEY. The following table, published by the Department of Agriculture, Division of Statistics, shows the acreage, production, and value of barley in the United States in 1900:

STATES AND TERRITORIES.	BARLEY.				
	Acreage.	Yield per acre.	Production.	Value per bushel.	Total value.
	<i>Acres.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Cents.</i>	<i>Dollars.</i>
Maine.....	11,508	27.4	315,819	62	195,498
New Hampshire.....	4,598	22.7	102,786	67	68,867
Vermont.....	17,210	29.1	500,811	52	260,422
Massachusetts.....	1,661	25.8	42,854	69	29,569
Rhode Island.....	819	28.0	8,738	77	6,737
Connecticut.....	.....	.....	.....	.....	.....
New York.....	170,542	22.0	3,751,924	51	1,912,481
New Jersey.....	.....	.....	.....	.....	.....
Pennsylvania.....	7,793	19.0	148,067	50	74,084
Delaware.....	.....	.....	.....	.....	.....
Maryland.....	.....	.....	.....	.....	.....
Virginia.....	.....	.....	.....	.....	.....
North Carolina.....	.....	.....	.....	.....	.....
South Carolina.....	.....	.....	.....	.....	.....
Georgia.....	.....	.....	.....	.....	.....
Alabama.....	.....	.....	.....	.....	.....
Texas.....	2,049	24.6	50,406	72	36,292
Arkansas.....	.....	.....	.....	.....	.....
Tennessee.....	1,743	14.7	25,622	62	15,886
West Virginia.....	.....	.....	.....	.....	.....
Kentucky.....	1,312	26.6	37,523	55	20,638
Ohio.....	23,058	27.0	622,566	43	267,708
Michigan.....	37,858	23.9	904,806	47	425,259
Indiana.....	7,542	24.6	185,533	47	87,301
Illinois.....	13,365	25.6	342,144	47	160,808
Wisconsin.....	945,458	25.5	6,259,179	44	2,764,089
Minnesota.....	324,788	22.4	7,275,251	38	2,764,595
Iowa.....	443,516	26.4	11,708,822	37	4,332,264
Missouri.....	713	20.8	14,830	45	6,674
Kansas.....	194,735	21.5	4,186,802	33	1,381,645
Nebraska.....	33,874	17.6	587,382	33	193,836
South Dakota.....	107,943	14.3	1,543,571	31	478,507
North Dakota.....	243,761	8.2	1,998,840	35	699,594
Montana.....	5,194	38.8	201,527	48	96,733
Colorado.....	12,672	24.8	314,266	50	157,133
New Mexico.....	1,076	29.0	31,304	69	19,346
Utah.....	5,964	36.5	217,686	55	119,727
Idaho.....	12,185	32.8	399,012	50	199,506
Washington.....	41,505	33.4	1,386,267	39	540,644
Oregon.....	81,847	28.9	965,928	42	380,480
California.....	869,591	16.7	14,856,170	43	6,388,158
United States.....	2,894,262	20.4	58,925,633	40.8	24,075,271

BARNADO'S HOMES, or, more properly, homes of the National Incorporated Waifs' Association, are institutions for the housing and care of orphan waifs, the first being established by Dr. Thomas John Barnado in Stepney Causeway, London, in 1867. For the year ending December 31, 1899, the association reported 22 homes in England and 4 in Canada, and proposed similar ones for Australia. Destitute children, irrespective of sex, nationality, creed, or physical defects, are admitted to these homes, where they receive such instruction and industrial training as will tend to enable them to make a living. There is also maintained an emigration bureau, through which large numbers of children have been sent to Canada and the colonies. During the year reported, the work of the association was greatly extended, its liabilities reduced by £12,832, and its income increased to £147,049, or £3245 above that of 1898. The new admissions were 3011, making the number of children maintained for the whole or a part of the year, 7459. Other statistics for 1899 were as follows: Children in residence on December 31, 4798; rescued during the year from utter destitution, 1829; rescued from "grave moral danger," 1182; boarded out in country districts, 1931; helped to situations, etc., 1541; physically disabled children admitted, 73; free meals supplied, 78,639; free lodgings provided, 78,503; publications sold or given away, 1,112,261. Since the founding of the homes 40,200 children had been rescued and trained and 10,609 sent to Canada. The headquarters of the association, of which Lord Brassey is president and Dr. Barnado director, are at 18-26 Stepney Causeway, London, E. C.

BARNARD, HENRY, LL.D., L.H.D., the distinguished pioneer in educational reforms, died July 5, 1900, at Hartford, Conn. Born in the same city, January 24,

1811, he graduated at Yale in 1830; was admitted to the bar in 1835, and from 1837 to 1840 sat in the Connecticut Legislature. In that body he advocated reforms in prisons and insane asylums, and carried through laws completely reorganizing the common school system, his reforms including improved construction of school-houses, high schools, teachers' institutes, normal schools and new methods of instruction. He then became a member and secretary of the State Board of Education created by this legislation. In 1842 the board was abolished and the entire educational law repealed. After devoting a year to lecturing on educational topics in every State except Texas, addressing State Legislatures and conducting conferences in fifty cities, in 1843 he accepted a call to be superintendent of education for Rhode Island, and instituted similar reforms in that State during his service until 1849. In Rhode Island the principle of the right of taxation for school purposes had been denied for two hundred years, but such was Dr. Barnard's influence that every town in the State adopted the principle by a two-thirds vote. During those five years he held more than 1300 educational meetings and established twenty-nine libraries. In 1850 he declined the presidencies of the State universities of Indiana and Michigan, but accepted the principalship of the newly established State Normal School at New Britain, with the added duty of being superintendent of the Connecticut schools. In 1854 ill-health forced him to give up work for a time. From 1859 to 1861 he was president of the University of Wisconsin and agent of the board of regents of the normal school fund. During this early period of the educational history of Wisconsin he gave the work of progress a great impetus. In 1865 and 1866 he was temporary president of St. John's College, Annapolis, Md., and from 1867 to 1870 first United States Commissioner of Education. He organized the Bureau of Education and issued four reports, in which he advocated nearly all the reforms which have since been introduced in American educational work. While he was secretary of the Connecticut School Board and later, when State superintendent, he published the *Connecticut Common School Journal*, and during his term of service in the neighboring State he edited the *Rhode Island School Journal*. In 1855 he began the *American Journal of Education*. This he continued until 1886, writing a large proportion of the articles himself. The fifty volumes of this periodical constitute in a sense a great American encyclopædia of education. In the latter year he announced a collected edition of his works, which comprise over eight hundred individual treatises, and when published under the title of the *American Library of Schools and Education*, fill fifty-two volumes. A few of the titles of these works are *School Architecture* (1839); *National Education* (1840); *National Education in Europe* (1854); *Papers for Teachers* (published while in Wisconsin); *Kindergarten and Child Culture Papers*; *Pestalozzi and Pestalozzianism* (1861); and *American Pedagogy* (1878). In American educational history the name of Henry Barnard is inseparably connected with that of Horace Mann and should take rank with it. He was the creator of the public school systems of Connecticut and Rhode Island as Horace Mann was of that of Massachusetts. They co-operated with each other in influencing public opinion and securing legislation, establishing normal schools, and in bringing about other reforms, and through their initiative or example many other States adopted similar reforms. For his own reputation Horace Mann had the fortune to die while he was still in the midst of his brilliant career. Henry Barnard, however, always struggled against poor health, but in spite of that lived twenty years after his life work was practically closed—long enough to be almost forgotten by the present generation and long enough to have the brilliancy of his work observed by the educational workers who now occupy the field. The annual report of the United States Commissioner of Education for 1896-97 (pp. 769-810) has an appreciation of Dr. Barnard's educational work from the pen of A. D. Mayo. W. S. Monroe published in 1893 a sketch of the *Educational Labors of Henry Barnard* (Syracuse, 1893).

BARNARD COLLEGE, New York, organized 1889, a woman's college, now an integral part of Columbia University (*q.v.*).

BAR OF THE CITY OF NEW YORK, THE ASSOCIATION OF THE organized in 1869 and incorporated in 1871, was "established to maintain the honor and dignity of the profession of the law, to increase its usefulness in promoting the due administration of justice, and to cultivate social intercourse among its members." It owns and occupies a commodious building at 42 West Forty-fourth Street, New York City, and possesses a law library of 52,154 volumes, at a cost of \$191,302.64. The admission fee is \$100; annual dues, resident members, \$25 to \$50; non-resident members, exempt. The last report showed 1513 resident members, 128 non-resident members, and 22 honorary members. President, John E. Parsons; corresponding secretary, B. Aymar Sands; librarian, William F. Kip.

BARON DE HIRSCH FUND, a deed of trust executed in March, 1890, by Baron Maurice de Hirsch for the benefit of Russian and Roumanian Jewish immi-

grants to America; capital, \$2,500,000; annual income, \$100,000. Its work includes the reception of immigrants in America; their education in the English language; provision for free mechanical instruction at the Baron de Hirsch Trade School, established in 1890 at 225-227 East Ninth Street, New York City; and productive work in agricultural and industrial departments, of which the leading educational feature is the Woodbine Agricultural and Industrial School. Since 1896 the fund has had the support of the Jewish Colonization Society, and has co-operated with it in the United States. President, M. S. Isaacs; general agent, A. S. Solomons; headquarters, 45 Broadway, New York.

BARRETT, JAMES, jurist, died at Rutland, Vt., April 21, 1900. Born in Stratford, Vt., in 1814, he graduated at Dartmouth College in 1838, and two years later was admitted to the bar. He served as State attorney and State senator in Vermont, and in 1857 was elected to the Supreme Court bench, where he remained until 1880.

BARRIE, JAMES MATTHEW, M.A., LL.D., the Scottish author, was born at Kirriemuir, Forfarshire, May 9, 1860; studied at Dumfries Academy; and in 1882 was graduated M.A. from Edinburgh. After a brief journalistic apprenticeship at Nottingham, he established himself in London as regular contributor to the *British Weekly*, the *Speaker*, the *Observer*, and the *St. James's Gazette*. His first publication was the satire *Better Dead* (1887). But it was in 1888 he earned his earliest fame with the *Auld Licht Idylls*—those intimate revelations, droll in their humor, stern in their pathos, of concentrated and remote Scots hamlet-life. In similar vein were *A Window in Thrums* (1889) and *The Little Minister* (1891), the latter of which, dramatized in 1897, won for him in less than two years more than \$200,000 royalty. His principal further work includes *An Edinburgh Eleven* (1888), a small volume of reminiscent sketches; *My Lady Nicotine* (1892); *Walker, London*, a successful farce-comedy; *Margaret Ogilvy* (1896), a graceful biography of the author's mother; and *Sentimental Tommy* (1896). During 1900 much interest was aroused in Mr. Barrie; in particular through *Tommy and Grizel*, which first attracted attention by its publication in *Scribner's Magazine*, and less actively through the play, *The Wedding Guest*. *Tommy and Grizel*, a sequel to *Sentimental Tommy*, introduces Tommy at that time of his career when he has become assistant to a hack writer, thus incidentally affording the author opportunity for observations on the literary art. It is marked by a psychology even more delicately subtle than is customary with Mr. Barrie. Critical estimates of the book were conflicting; but it seemed generally to be admitted that, if not Mr. Barrie's best, it was at least one of the best stories of the year.

BARRY, CHARLES, son of Sir Charles Barry, the eminent architect, and himself a leading member of the same profession, died in London, June 2, 1900. He was born in 1825, and being educated in his father's office, was employed by him in the building of the new Houses of Parliament. Later he designed the three sides added to Burlington House in 1872, and built Dulwich College, the home of the Institute of Civil Engineers and other edifices remarkable for their classic excellence. Mr. Barry was for some time architect to the Athenæum Club, and for many years president of the Institute of British Architects.

BARTOL, CYRUS AUGUSTUS, D.D., twenty-five years the pastor of the West Unitarian Church, of Boston, died December 16, 1900. He was born in Maine in 1813, graduated from Bowdoin College in 1833 and from the Harvard Divinity School three years later. He was many years Rev. Charles Lowell's assistant in the West Church before becoming the pastor. One of the radicals of his denomination, he strongly opposed the movement among Unitarians for the formal adoption of a creed and form of service. The famous Transcendental Club of Boston numbered him among its members. He had a clear and picturesque style of writing and published among other works: *Discourses on the Christian Spirit and Life* (1850); *Christian Body and Form* (1854); *Pictures of Europe* (1855); *Radical Problems* (1872); *The Rising Faith* (1874); and *Principles and Portraits* (1880).

BARYTES. The production of crude barytes, or heavy spar, in 1899 was 41,894 short tons, having a value of \$139,528, as compared with 31,306 short tons, valued at \$106,339, in 1898. The product came chiefly from Missouri. The imports of crude barytes were 1739 pounds, with a value of \$5488, and of the manufactured material, 2111 pounds, valued at \$22,919.

BASEBALL. Any one who had hopes of improvement in the conduct of the professional business in our so-called national game during 1900 must have been sadly disappointed. As a matter of fact, football is now much more a game of national interest in many ways than is baseball, and it has the advantage of being in the United States, though not in England, distinctly amateur in spirit and play. It is not that professionalism is in itself bad, but the conditions which it provokes are dangerous to clean sport. In golf, racquets, court-tennis, and a few other games, professionals are, as a rule, of a high class. Professional baseball does not present

many of the characteristics which make for success. The whole history of league baseball for the past forty years is a record of succeeding misunderstandings and disputes, varied by a number of acts of distinct value, as when pool gambling was abolished from the diamond forever. The condition of things has seldom been worse than during the past few years. Unfortunately, the feature which seems to have given the most anxiety to the authorities has been, not rowdy playing, "kicking," and similar disgraces, which have driven away patrons, but the consequent falling off in receipts. While good financial profits are essential for the life of the league game, any overlooking of the necessity for carrying out the spirit of clean sport, even if that sport be pursued by professional players, must be disastrous to the game's well-being. In addition, as pointed out by a recent critic, the magnates of the National League and American Association of Professional Baseball Clubs forget the increasing counter-attraction of those modern sports which exist in such variety in the complex modern world of recreation, among which are mentioned the contests of the turf and the cycling-track, and the modern fad of golf, all of which take up the same season as baseball. In addition to matters of internal concern in 1900, the League management had to contend with two outside influences resulting in part from the discords of past years. One of these was the new rival American Association, and also the American, formerly the Western, League, which has aspired to become a major league; and the new Protective Association of Professional Baseball Players, formed for the purpose of forcing the righting of certain alleged grievances. In the National League pennant race of 1900 the twelve-club circuit was reduced to an eight-club circuit by the dropping of the Baltimore, Washington, Cleveland, and Louisville clubs. It was hoped to do away, as one result, with one club's maintaining a lead throughout the season, but such was not the case. Brooklyn again won, with 82 victories, 54 defeats, and 6 ties, out of 142 games, 60.3 per cent.; Pittsburg made an interesting spurt toward the close of the season and gained second place, with 79 victories, 60 defeats, and 1 drawn game out of 140 played, 56.8 per cent.; Philadelphia was third, 75 victories and 3 ties out of 141 games, 54.3 per cent., and New York brought up the rear with 43.5 per cent. of her games won. Most of the minor leagues did not complete their season, and a minority of the clubs are said to have been successful owing, it is said, to excess in the matter of salary limits.

Amateur baseball is confined chiefly to the colleges, to whom we must look for any improvement in the spirit of the game. Even among the colleges the conditions are not yet ideal, though in the main they are good. It is a matter of interest that in 1900 the amateur arena was extended by the formation of a league of six athletic clubs about New York City. The Crescent A. C. won the pennant with 9 out of 10 games played; the record of the other clubs being: Englewood, 6 out of 9; New York, 3 out of 6; Morristown, 3 out of 9; Knickerbocker, 2 out of 7; Montclair, 1 out of 7. It should also be noted that the popularity of baseball as a field game at large continues strong, a testimonial to the inherent attractions of the sport. The leading Eastern college nines, according to various critics, ranked in 1900: Princeton, Georgetown, Holy Cross, Brown, Harvard, Yale, Pennsylvania, and Cornell. The doubtful amateur standing of at least two of these institutions, however, calls for a partial rearrangement of this list. A feature of the season was the good playing of Brown. In the Princeton-Harvard-Yale series the ranking was in the order named. Princeton won twice against Yale, the third game not being played, and won and lost a game with Harvard, the deciding game not being played. Harvard won twice against Yale, and lost once—the first game. In the Intercollegiate Association, 8 games played by each college, Williams won 7, Wesleyan 5, and Amherst, 0. The name of this organization again suggests the wonder why a representative intercollegiate baseball league has never been formed. Western college baseball continues to show improvement in methods of play.

BASUTOLAND, an inland colony of Great Britain in South Africa, situated between Natal, Orange River Colony, and Cape Colony. It has an area of 10,293 square miles, with an estimated population of 250,000. The capital is Maseru, with an estimated population of 862, of which about 100 are Europeans. The soil is fertile and well watered, and is supposed to be rich in minerals. The principal products of the colony are grain, wool, and cattle. The exports for the fiscal year 1900 amounted to £133,864 against £82,615 in the preceding year. The imports show a decrease from 1899, £85,527 against £93,683. The chief articles of import are blankets, hardware, and groceries. The revenue for the fiscal year of 1900 has increased from £46,847 to £69,769, and the expenditures from £46,417 to £59,492. The revenue is obtained from the Cape contribution (£18,000 per annum), the post-office, native hut-tax, and the sale of licenses. The colony has 177 schools, with 11,134 scholars, mostly under the control of the French Protestant Mission, and 2 government schools. The colony is connected by telegraph with Cape Colony and the Orange River State. The colony is administered by a resident commissioner, under the direc-

tion of the high commissioner for South Africa. There are magistrate's courts for cases between Europeans and natives, while cases between the natives themselves are referred to the native chiefs. During the South African War the natives have remained loyal to the British, regardless of supposed advances on the part of the Boers. See COLONIES.

BATES, JOHN COALTER, United States army officer, after the creation of the military division of the Philippines in April, commanded the Department of Southern Luzon. General Bates was born in St. Charles County, Mo., in 1842, and studied at Washington University, St. Louis. Entering the army in 1861, he served from Gettysburg to the close of the war on General Meade's staff, in 1863 being appointed captain. During the following 30 years he was stationed west of the Mississippi, chiefly in the Indian regions, and rising in command, was appointed colonel in the Second United States infantry in 1892. He was president of the board which devised the present drill and firing regulations. On the outbreak of the Spanish-American War, he was made brigadier-general of the volunteers, and during the Santiago campaign was promoted major-general. He was honorably discharged and reappointed brigadier-general of volunteers in 1899. This same year he was on service in Cuba, being for a time military governor commanding Cienfuegos. In 1900 he did excellent work in the Philippines; his operations in southeast Luzon and northern Mindanao resulted in substantial successes for the American forces.

BATH HOUSES, MUNICIPAL. See MUNICIPAL BATH HOUSES.

BATUM PIPE-LINE. See RUSSIA.

BAUXITE. The production of bauxite, which is mined chiefly to be used in the manufacture of alum and aluminium, amounted in 1899 to 35,280 long tons, valued at \$125,598, an increase of 10,131 tons over the production of the previous year. Much of this increase came from Arkansas, which is a new and promising producing region for this substance, while, on the other hand, many of the important deposits of the Georgia-Alabama belt are now nearly exhausted, although some new mines have been discovered. The Arkansas deposits are more regular than those in Georgia and Alabama, and the ore has great lateral extent as compared with thickness. See ALUMINUM.

BEAMAN, CHARLES COTESWORTH, an eminent New York lawyer, died December 15, 1900, at the age of 60. He was born in Maine, and after graduating from Harvard in 1861, entered the law school. For a time private secretary to Charles Sumner, he became interested in the Alabama claims controversy, and in 1871 wrote *The National and Private Alabama Claims, and Their Final and Amicable Settlement* (1872). In 1872 President Grant appointed him solicitor for the United States before the Geneva Tribunal of Arbitration, and afterward he was examiner of claims in the Department of State. Meanwhile, with the firm of Dickerson & Evarts, he was rising in his profession in New York, and when the firm of Evarts, Choate & Beaman was formed in 1884, Mr. Beaman won prominence as the consulting member.

BEARD, WILLIAM HOLBROOK, animal painter, died February 20, 1900. He was born at Painesville, O., April 13, 1825, and after studying in Europe settled in New York in 1861. In the following year he became a member of the National Academy. He attained some reputation through his pictures of animals and allegorical works, many of which were humorous. Among his more important pictures are: "The Power of Death," "The Four Seasons," "The Spirit of the Storm," "The Witches' Night," "Overboard," "The Coming of Day," "The Four Elements," and "The Shades of the Druids." He published a text-book entitled *Action in Art*, and a collection of sketches, *Humor in Animals*.

BECHUANALAND PROTECTORATE, a part of the former British Bechuanaland Crown Colony, which was annexed to Cape Colony in 1895. It is situated between the Transvaal Colony, Cape Colony and German Southwest Africa, and its area is estimated all the way from 213,000 to 386,000 square miles. Its population is estimated at 200,000, including about 500 Europeans. The principal products are maize, wool, hides, cattle, and wood, which are exported in considerable quantities. The revenue is derived chiefly from custom duties and hut-tax, the latter mostly collected by native chiefs. The headquarters of the Protectorate are at Mafeking, which is connected by rail with Kimberley, and by a telegraph line with Cape Colony. The administration of the Protectorate is in the hands of a resident commissioner and two assistant commissioners. All the laws for the Protectorate are proclaimed by the high commissioner for Cape Colony.

BECKER, KARL LUDWIG FRIEDRICH, a celebrated German artist, died December, 1900, at the age of 80. He studied at Berlin under Kloeber, and then at Munich under Hess, who instructed him in fresco-painting. The Berlin Academy sent him to Paris and Rome, where he devoted himself to the study of the old masters. His paintings belonging to this period are mythological in character and admirable for

their coloring and composition. The historical paintings of a later date are characterized by the same qualities, and also truth in subject-matter. His work, which is represented in the leading art galleries of Europe and in the Metropolitan Museum of Art in New York includes: "Visit of Sebastian del Piombo to Titian" (1861); "The Doge in Council" (1864), and "Charles V. Visiting Fugger" (1866, National Gallery, Berlin). "Othello" (Breslau, 1880) shows a decline in his artistic powers.

BEQUEREL RAYS. See PHYSICS.

BEECHER, Rev. CHARLES, fifth son of the Rev. Lyman Beecher and brother of Henry Ward Beecher, died at Haverhill, Mass., April 21, 1900. He was born at Litchfield, Conn., October 7, 1815, and after graduating at Bowdoin College in 1834 took a theological course in Lane Seminary, and was ordained to the Presbyterian ministry, becoming pastor of a church at Fort Wayne, Ind., in 1844. In 1851 he became a Congregationalist, and thereafter had pastorates at Newark, N. J., Georgetown, Mass., and Wysox, Penn. From 1870 to 1877 he lived in Florida, where for two years he was State superintendent of public instruction. He edited the *Autobiography and Correspondence of Lyman Beecher* and the *Plymouth Collection of Hymns and Tunes*, and wrote: *Redeemer and Redeemed*; *The Incarnation, or Pictures of the Virgin and Her Son*; *Pen Pictures of the Bible*; *Patmos*; *David and His Throne*; *Spiritual Manifestations*.

BEECHER, Rev. THOMAS KINNICUT, sixth son of the Rev. Lyman Beecher, died March 14, 1900. He was born at Litchfield, Conn., February 10, 1824, and after graduating at Illinois College in 1843, taught in Philadelphia and Hartford and then entered the Congregational ministry. In 1852 he founded a Congregational church at Williamsburg (now a part of Brooklyn) and was its pastor for two years. In 1854 he became pastor of the Independent Congregational Church (now the Park Church) at Elmira, N. Y., and continued as such to the time of his death. During the Civil War he was chaplain of the One Hundred and Forty-first New York Regiment. Among his writings are *A Well-Considered Estimate of the Episcopal Church and Our Seven Churches*. Also on March 14 his sister, Mrs. Mary Foote Beecher Perkins, died. With her sister, Catherine Beecher, she founded and managed the Hartford (Conn.) Female Seminary.

BEEKMAN, HENRY RUTGERS, judge of the Superior Court of New York, died December 17, 1900, at the age of 55. Graduating from Columbia College in 1865, he entered the law department and eventually became member of the firm of Ogden & Beekman. Active in the municipal affairs of New York, he was president of the Park Commission in 1886 and afterward president of the Board of Aldermen. As corporation counsel during Mayor Hewitt's administration he was prominent in the promotion of rapid transit, and drew up the bill ultimately passed by the Legislature. In 1894 he was elected member of the Superior Court.

BEET SUGAR. See AGRICULTURE (paragraph Investigations in Agriculture) and SUGAR INDUSTRY.

BEHRENDTS, ADOLPHUS JULIUS FREDERICK, D.D., a Congregational clergyman, and one of the leading preachers in the United States, died at his home in Brooklyn, New York City, May 23, 1900. Born in Nijmegen, Holland, December 18, 1839, he came to America with his parents, landing at New Orleans in 1845. Being thrown upon his own resources at the age of 14, he taught school for a time, learned the cabinet-making trade, and finally entered Denison University, at Granville, O., as a junior, graduating in 1862. During the next three years he studied at Rochester Theological Seminary, and graduating there, was called to a Baptist pastorate at Yonkers, N. Y., in 1865. Here he remained until 1873, when he went to Cleveland, O., where he had a charge until 1876. In that year he withdrew from the Baptist denomination and accepted a call to the Union Congregational Church, of Providence, R. I., where he remained for seven years. In March, 1883, he succeeded the late Rev. Henry M. Scudder, D.D., as pastor of the Central Congregational Church in Brooklyn, a charge he retained to the time of his death.

Dr. Behrends was a man of great intellectual power and of pleasing yet resolute personality, which, combined with a public address both happy and impressive, won him a place among the foremost American preachers. He had strong convictions and the courage and ability to utter them forcefully. Dr. Behrends's theological position, however, is difficult to state; it is even safe to say that, in its entirety, it would have been difficult for him to state it himself. His convictions were wont to concern themselves with truths, or phases of truths, or hypotheses, viewed apart from what may be termed a whole truth, or viewed apart from their necessary relations to other hypotheses or other phases of truths. Thus arose contradictions. He defended creeds when liberal thinking, or, perhaps, the liberalism that denotes a lack of thinking, seemed to him to imperil Christian faith; he attacked dogma where to him it seemed to restrict the progress of vigorous Christian life. He accordingly appeared both conservative and liberal, as when he resisted some of the more

important conclusions of modern science and criticism, and then declared himself willing to abandon all dogma in order to regain a simple, practical, essential Christianity. One of his last addresses, delivered at a meeting of the Ecumenical Conference in New York a few weeks before his death, should be noted, in which he called for a bonfire of creeds and the "higher criticism," believing that a simple and sufficing faith would be left. As a preacher of this faith Dr. Behrends was a man of large and beneficent influence. He was a keen scholar and a wide reader, and, besides his published sermons, he left in print several works of value. These include: *Socialism and Christianity*, being lectures delivered at Hartford Theological Seminary in 1886; *The Philosophy of Preaching*, lectures delivered at the Yale Divinity School in 1890; *The Intellectual Equipment of the Preacher*, lectures at the Bangor Theological Seminary in 1895; *Missions*, lectures at Syracuse University in 1896; *The Old Testament Under Fire* (1897); *The World for Christ*.

BEHRING SEA. See SEALING.

BELGIUM, a kingdom of western Europe, is bounded on the north by the Netherlands, on the east by the German Empire, on the south by France, on the west by the North Sea. It has an area of 11,373 square miles and a population estimated on January 1, 1900, at 6,744,532, giving a density of 594 to the square mile. The prevailing languages are French, spoken by about 2,500,000 Walloons in the south; Flemish, spoken by nearly 3,000,000 people in the northern provinces; and German, spoken by about 750,000 people. The largest towns are Brussels, with a population (1899) of 561,130; Antwerp, 277,576; Ghent, 210,000; Liege, 169,202; Mechlin, 55,495; Verviers, 52,415. Nearly the whole population professes the Roman Catholic faith, the Protestants numbering about 10,000 and the Jews 4000. In the beginning of 1898 there were 6608 primary schools, with 764,300 pupils; 128 secondary schools, with 22,870 pupils, and 35 athenæums and colleges, with 7244 students. The universities of Liege, Brussels and Ghent give courses in law, medicine, philosophy, and science; the University of Louvain adds a course in theology. The attendance at the four institutions were: Louvain (1898-99), 1890 students; Liege (1899-1900), 1542; Brussels (1899-1900), 1022; Ghent, (1898-99), 743. Schools, supported partly by the municipalities and partly by the government, have been opened to teach the children of the poor household economy. Over a dozen such schools exist in Liege, where young girls are instructed in cooking, sewing, the care of little children, and the elementary rules of hygiene.

Production and Industry.—Of the total surface, 65 per cent. is under cultivation and 18 per cent. under forest; the rest forms roads, rivers, and marshes. In 1895 about 2,000,000 acres were under cereals, 456,000 acres under potatoes, 1,576,260 acres under fodder, and 133,678 acres under sugar beets. In 1897 the wheat crop amounted to 18,962,290 bushels, and the sugar-beet crop to 961,437 tons. Of late the production of cereals has been declining, while that of sugar beets has rapidly increased. In 1900 the yield was 2,179,640 tons; for 1901 it was estimated at 2,637,180 tons. Belgium is especially rich in coal and iron. In 1898, 114 mines yielded 22,088,335 tons of coal, of the value of 242,893,000 francs. The principal coal districts are in the provinces of Hainault and Namur; in Hainault, 89,500 men produced 15,861,000 tons in 1898; in Namur, 3107 men produced 573,660 tons. In 1898 the output of pig iron was 979,755 tons, and of steel manufactures, 1,221,251 tons. The value of the outputs from the quarries in 1898 was 52,799,930 francs. The principal manufactures are iron and steel, fire-arms, silks, laces, linens, woollens, cottons, leather and metals. The sugar refining industry has developed rapidly of late; the product in 1897 amounting to 240,431 tons. The value of the herring fishery in 1899 was about \$35,000, and of the coast fisheries \$883,667.

Commerce.—The commerce of Belgium during the last five years has experienced a wonderful growth, due partly to favorable economic conditions, but in very great measure to the wise policy pursued by the government in fostering industry and furthering the spread of commercial and technological education. The consular system of Belgium is probably the most admirable in the world, and is to be credited with a large part of the success Belgian enterprise has attained in foreign countries. At home ports have been improved, and internal communication has been facilitated. On July 22, 1900, King Leopold inaugurated new docks and slips at Brussels, which represented an outlay of 35,000,000 francs. The new improvements, which included a canal seventeen miles long, brought the sea to Brussels by making the city accessible to vessels of 2000 tons, when before only boats of 300 tons could approach. Of equal importance are the improvements carried on in the port of Antwerp, costing up to date, 20,000,000 francs. It was found that Antwerp, through lack of docking facilities, was falling behind its competitors, Rotterdam and Hamburg. In 1880 Antwerp received 2,504,000 tons of cargo; Rotterdam, 2,260,000 tons, and Hamburg, 2,496,000 tons. In 1897 Antwerp received 4,694,000 tons; Rotterdam, 8,484,000 tons, and Hamburg, 8,066,000 tons; thus, while her neighbors had gained nearly 300 per

cent. Antwerp gained only 100 per cent. The difference in growth was due to the fact that Rotterdam had over 25 miles of quay, and Hamburg 16½ miles, while Antwerp had only 3½ miles. There were, indeed, about 10 miles of wharves in Antwerp, but these were inaccessible to vessels of large draught. To deepen the channels, then, and to increase the line of deep-water quays is the object of the extensive operations now going on. In line with this general policy of the government was the establishment at the horticultural school at Vilonde of a special department for the training of young men intending to settle in Congo. The development of that country has been made a special care, and has had beneficial effect on the commerce and industries of Belgium. The results of this wise commercial policy are apparent in the following figures: In proportion to its population Belgium is now the chief trading country in the world. Its special commerce averages 574 francs per head, Great Britain coming second with only 480 francs per head, Germany third with 211, France fourth with 207, the United States fifth with 129. In 1895 the general imports amounted to 2,904,948,026 francs, and the general exports to 2,604,862,583 francs; in 1899 they were 3,683,534,400 francs and 3,378,412,800 francs respectively, an increase for the four years of 28 per cent. in imports and nearly 30 per cent. in exports. The special imports in 1895 were 1,680,000,000 francs; in 1898, 2,044,000,000 francs; the special exports for the same years were 1,385,000,000 francs and 1,787,000,000, an increase of nearly 25 per cent. in imports and 30 per cent. in exports. The principal articles imported are cereals, raw textiles, mineral substances, chemicals and drugs, resin, timber, oil seeds, metals, hides, tissues, and coal. The chief exports are cereals, coal, raw textiles, yarns, linen and wool, machinery, glass, mineral substances, iron, sugar, and chemicals. Of the special imports in 1899, worth 1,978,281,600 francs, France contributed 389,000,000 francs; Great Britain, 312,000,000 francs; Germany, 285,000,000 francs; United States, 280,000,000 francs. Of the special exports, which were worth 1,964,894,400 francs, Germany took 485,000,000 francs; Great Britain, 360,000,000 francs; France, 345,000,000 francs; United States, 65,000,000 francs. The special imports for 11 months ending November 30, 1900, amounted to 1,923,958,000 francs, and the principal exports to 1,618,900,000 francs. During 1900 the United States imported into Belgium \$46,929,953 worth of goods, and exported \$14,602,542 worth, sending cereals, cotton, petroleum, machines, oils, chemicals, and drugs, and taking iron, raw wool, glass, and beet sugar. On September 20, 1899, the largest vessel ever seen at Ghent entered the port. It came from Chester, Penn., with 6,400,407 pounds of petroleum, being the first of a fleet of tank vessels built to run between Chester and Ghent. In 1899 the entries at Belgian ports were 8780 vessels of 8,702,350 tons, and the clearances 8699 vessels of 8,373,068 tons. The port of Antwerp held three-fifths of this tonnage, and Ostend one-fourth. The mercantile navy of Belgium is small. In 1898 it comprised 66 ships of 99,971 tons; in 1899, 73 vessels of 108,537 tons.

During 1900 trade showed a slight depression. The United States consular reports regard it as a natural reaction from the feverish activity of the last five years. Another reason is the fact that enterprises in foreign countries have drained Belgium of an enormous amount of capital. In Spain, in Congo, and especially in Russia, Belgian interests have increased wonderfully. In January, 1900, the nominal capital of Belgium in Russia was estimated at 1,000,000,000 francs and the actual value at 1,500,000,000 francs. Of 57 foreign companies formed in Russia from August, 1898, to August, 1899, 28 were Belgian. During the calendar year 1899, 67 new companies were organized in Russia; of these 2 were German, 10 English, 12 French, and 41 Belgian. In 1899 and 1900 Belgian merchants invaded South Russia and established markets there for machines and tools. During 1900 many companies were formed for the exploitation of the Orient, China especially. These included railroad companies, banks, and industrial syndicates.

Communication.—In 1897 there were 5743 miles of roads in Belgium and 1370 miles of navigable rivers and canals. In 1898 there were 2870 miles of railway, of which the state owned 2487 miles and worked 2069 miles; 798 miles were worked by companies. The receipts of the state for the year were 170,000,000 francs, and the expenses, 102,000,000 francs. The length of telegraph lines in 1898 was 3960 miles, with 45,944 miles of wire. Preparations have been made for the opening of cable communication with England in February, 1901.

Army.—The army is raised mainly by voluntary enlistment; military service is not obligatory on every citizen, but conscription by lot is resorted to whenever enlistment does not supply the full quota fixed by Parliament for the year. The contingent raised by conscription amounts to 13,300 for the year 1901. The peace strength of the army in 1899 was 51,502 officers and men. The war footing is estimated at 163,000 men. In addition there is the national guard, comprising 40,000 men in active service, and 100,000 men non-active. The terms of military service are eight years in the active army, of which two-thirds are spent on furlough, and five years in the reserve.

Finance.—Revenue is derived from direct taxation (property tax, personal tax, inheritance tax, trade licenses, and mines), indirect taxes (customs, excises, registration fees, and stamps), and tolls (rivers, canals, railways, posts, and telegraphs). The chief items of expenditure are the railways, telegraphs, telephones, and ports, the interest on the public debt, war, public works, interior, finance, and justice. In 1899 the revenue amounted to 466,679,386 francs, and the expenditure to 456,352,260. The budget for 1900 showed an estimated income of 452,246,618 francs, and an expenditure of 452,996,828 francs. The consolidated debt in 1900 amounted to 2,607,081,650 francs, and the interest on it to 127,940,416 francs.

Government.—Belgium is a "constitutional, hereditary, and representative monarchy." The constitution of 1831 vests the legislative power in the king, the senate, and the chamber of representatives. All the representatives and the majority of the senators are elected directly by the people, the former for four years, the latter for eight. A portion of the senators are elected by the provincial councils. The law of September 7, 1893, introduced the principle of plural voting, as described in a subsequent paragraph. In the elections of May 27, 1900, 1,452,232 electors cast 2,239,621 votes. The king is assisted in his executive functions by a ministry responsible to the Chamber.

HISTORY.

On December 29, 1899, the bill providing for proportional representation became law. To grasp the importance of this measure, which is destined to revolutionize the status of political parties in Belgium, an idea of the electoral system of the country is necessary. The constitution of 1831 admitted to the suffrage every Belgian citizen 25 years of age, but sought to avoid the dangers of universal suffrage by the principle of supplementary votes for citizens having an especial interest in the maintenance of public order. The law is complicated. It gives a vote to every male citizen resident for 5 years in the same commune, and not legally disqualified; 2 votes to citizens 35 years of age with legitimate issue, and paying a land tax of at least 5 francs a year, the double vote being accorded on the principle that the interest of a father of a family in political affairs is greater than that of a single man; 2 votes also to citizens 25 years of age with real property valued at 2000 francs, and 3 votes to citizens 25 years of age who can give proof that they have received the higher education. In 1900 there were 901,944 electors disposing of 1 vote, 313,187 disposing of 2, and 237,101 disposing of 3. The Liberals suffered severely by the operation of this law, and Socialists had for the most part taken their place in the Chamber, such of the Liberals as were elected having owed their success to a coalition with Socialists. On the other hand, the Clerical Right had increased out of all proportion to the actual number of sympathizers among the people. At the beginning of 1899 the Deputies included 112 Clericals, 28 Socialists, and 12 Radicals, although there was no such preponderance in the electorate. Divisions among the opponents of the Clericals, and especially among the Liberals, were the chief cause of this large clerical majority. Without venturing to advocate the abolition of plural votes, the Opposition brought forward proportional representation as a partial remedy. It was pointed out that, under existing conditions, a slight Clerical majority in the city of Brussels, for instance, would send its 18 representatives to Parliament solid for the Catholics; while the two defeated parties, whose combined votes often outnumbered the victorious plurality, would remain entirely unrepresented. Proportional representation, then, proposed the reapportionment of representatives among parties according to the ratio of each party vote to the total number of ballots cast. The Catholic party, which was in power in 1899, did not like the measure, but yielded for fear of a combination between Socialists and Liberals that should wipe them out by means of the very majority rule that now favored them; for Socialists and Liberals combined outnumbered the Catholics in the country, and proved it in the municipal election of 1899, when they carried Brussels, Antwerp, and Ghent.

What Proportional Representation Is.—The working of the system of proportional legislation, summarized from an account in the *Revue Politique et Parlementaire* for July is this: All nominations are made by petition, 100 names being sufficient to place a candidate's name on the lists. The candidates on every party ballot are arranged in numbered order; and this is most important, because a vote can be counted for only one candidate on the ticket, a regular vote being a vote for the man at the head of the list. If an elector prefers some other candidate, a mark opposite his name is a vote for him. Suppose, then, that in a district sending four representatives to Parliament three tickets are in the field, each with four candidates. The Board of Election, after the polling is over, computes the number of votes cast for each party, and the total number of votes cast. They find that 45,000 votes have been polled. Since four representatives are to be chosen, the electoral quotient is roughly 11,000. The party that has cast, say, 29,000 votes, is, therefore, entitled to three seats, the party that cast 11,000 votes obtains one seat, the third party remains unrepresented. In practice, of course, the partition of seats is more complicated, but is carried out

according to mathematical formulæ that give just results. Finally the three seats due to the first party are assigned to the first three candidates on its ballot, unless scattering votes have given the fourth man a majority over one of the preceding three. On the second ticket, which is entitled to one representative, the seat is assigned to the first man, unless, again, the irregulars have cast a larger vote for one of his followers. The chief characteristics of proportional representation are these: It gives the minority representation according to its strength. It restricts the voter to one party, and to one name only on the ticket of that party. It gives him the right of joining with 99 others to put any candidate in nomination. Finally it enables him to abstain from voting for obnoxious candidates, without hurting his party, for by inscribing any name on the regular ballot, he can swell the party vote, though he may not elect the man of his choice.

How Proportional Representation Worked.—On May 27, 1900, a new Parliament was elected under the proportional system. In the outgoing Chamber there were 112 Catholics, 12 Liberals, and 28 Socialists; into the new Chamber came 85 Catholics, 33 Liberals, 33 Socialists, and 1 Christian Democrat, a gain of 65 per cent. for the Opposition. In the Senate the complexion was changed from 70 Catholics and 32 Liberals and Socialists to 58 Catholics and 44 Liberals and Socialists. The gains of the Opposition would have been greater still if the apportionment of districts had been made with perfect fairness, but the government took care to mark out electoral divisions arbitrarily and unfairly. Moreover, between the Socialists and their Liberal allies, and among the Liberals themselves, perfect harmony had been wanting, and the full party strength was not displayed. Still, judged by the results of the municipal and provincial elections that took place on June 3, under the old majority system, proportional representation was more than justified. For while the Opposition had made such great gains in the May elections, they conquered only one place in June. The Catholics retained control of 6 out of 9 provinces, though outnumbered by the other parties throughout the country.

Political Parties.—The opposition in the Belgian Parliament during 1900 was composed of three elements, the Liberals, the Progressives, and the Socialists. In 1899 the three made common cause against the Catholics. Having triumphed, they quarrelled. The Progressives sympathized in great measure with the Socialists; the Liberals found many grounds of difference. The Socialists were by no means satisfied with what has been accomplished in the way of electoral reform, for they aim at the abolition of plural votes and the establishment of universal suffrage. Indeed, a fraction of the party rejected proportional representation as an unsatisfactory palliative; and only on November 18, at the National Congress of Socialists, did the party accept the reform as a step to higher things. The Liberals, on the contrary, were afraid of universal suffrage. Proportional representation had restored them a large part of their former power, and they could hope to retain it without the support of the Socialists. Universal suffrage would destroy their power, for the voters in Belgium are taking sides with Catholics or Socialists, and lend little support to half-way parties. The Progressives did not object to universal suffrage, but were content with proportional representation and made it their program to introduce the system into provincial and communal elections.

Warm debates occurred in the Chamber on the subject of the army. The military party, with King Leopold at their head, demanded an increase in the annual contingent raised by conscription, which now amounts to 13,300 men. They also asked for the abolition of the right of exemption on the payment of a certain sum. The Left showed itself in favor of increasing the army, but made the thorough reorganization of the military system an indispensable condition for their support. They advocated also a reduction in the terms of service. The Catholics as a body were opposed to any increase in the army, and insisted upon the retention of the right of exemption. They argued that the geographical position of Belgium made her of necessity a neutral state, and that a large army was therefore superfluous. Their opponents retorted that the preservation of neutrality necessitated the guarding of the frontier and that a large army was therefore indispensable.

By a law passed some five years ago, religious instruction was made a part of the educational programme in the primary schools; but as Catholic priests would, of course, have been the instructors, parents of other faiths than Catholic were permitted to keep their children away from school during the religious lesson. In 1900 the Catholic clergy announced their intention of exercising the right they had so far neglected. This determination caused great alarm in Brussels. It was announced that 75 per cent. of the children would be kept at home by their parents, and the Catholic clergy, recognizing that an attempt to execute the project would create a political crisis, let their plan fall.

In May, 1900, Parliament passed the Old Age Pension bill. Since 1891 the state has contributed an annual sum to be divided as additional premiums on annuities and accident policies. But whereas these supplies were voted from year to year,

the law of May, 1900, made them permanent. It provided that the government add 60 centimes to every franc invested through a provident society or in the *Caisse de Retraites*, and that every Belgian working man over 65 years who was in need should receive 65 francs per year. An annual appropriation of 12,000,000 francs was made for the purpose, and additional sums were authorized, if necessary.

On August 9, a serious strike broke out among the glassworkers at Charleroi. The strikers demanded an increase of 5 per cent. in wages. The masters responded by putting out half of the furnaces and cutting down production by 50 per cent. At the end of the year the number of strikers was 8000 and an additional demand had been made for the dismissal of all non-union workers. The end of the struggle appeared far off. On December 20, the longshoremen of Antwerp, technically known as "dockers," struck. The stevedore business of the port was almost entirely cut off, and great damage resulted. Serious riots broke out among the disaffected laborers, and bloody collisions with the police frequently occurred.

On February 5, Surmont de Volsberghe was made minister of labor and industry, and Lieber, minister of railroads. On April 11, King Leopold made a gift of all his real property to the state. On October 1, Prince Albert, heir to the Belgian throne, married the Princess Elizabeth of Bavaria.

BELIZE. See BRITISH HONDURAS.

BELL, JAMES FRANKLIN, born in Kentucky, was admitted to the United States Military Academy in 1874 and graduated in 1878. He received his commission as second lieutenant in the regular army in June of that year, and the commission of first lieutenant in 1890. In March, 1899, he was appointed captain of the Seventh Cavalry. When the Thirty-sixth United States Volunteers was recruited at Manila, Captain Bell was placed in command as colonel. This regiment was not attached to a brigade, and Captain Bell was allowed to act in southern Luzon as a "free lance," reporting only to headquarters at Manila. For "distinguished gallantry in action on September 9, 1899," Captain Bell was awarded a medal of honor. Later he was appointed brigadier-general of volunteers. Captain Bell's peculiar ability as a fighter lay not only in his bravery, but in the fact that he adopted the guerilla method of warfare, and the drawn-out skirmish line which the Filipinos themselves employed. Each of his men was thus thrown largely on his own resources, and made to depend on his own initiative. Toward the end of the year Captain Bell was made provost-general in Manila.

BELOOCHISTAN or BELUCHISTAN. See BALUCHISTAN.

BELTRAMI, EUGENIO, mathematician and president of the Reale Accademia dei Lincei, died in Rome, February 18, 1900. He was born at Cremona, November 16, 1835, and was educated at the University of Pavia, where he studied mathematics under Brioschi. After spending a few years in the service of the Italian railways he, in 1862, was appointed a professor in mathematics at Bologna, and in the following year he became professor of geodesy at Pisa. In 1866 Beltrami returned to Bologna and became professor of rational mechanics. In 1873 he was called to Rome, where he lectured until 1876, when he went to Pavia. In 1891 he returned to Rome, and in 1898 he was chosen president of the Reale Accademia dei Lincei. His most important work in pure mathematics is his *Saggio d'Interpretazione della Geometria non Euclidea*. His other papers in pure mathematics are well known to students of mathematics, as are also those in applied mathematics, dealing with hydrodynamics, elasticity, physical optics, electricity and magnetism, and thermodynamics. His last researches were devoted to the development of Maxwell's theories of electromagnetic phenomena.

BENEDETTI, Count VINCENT, a French diplomat, especially remembered for his part in the Ems affair, by which the Franco-Prussian War was precipitated, died March 28, 1900. Born in Bastia, Corsica, April 29, 1817, he studied law in Paris and entered upon a diplomatic career in 1840 as consular attaché at Alexandria. He became consul at Cairo in 1846, at Palermo, 1848, and then at Malta; and in 1851 received a mission to Constantinople, became consul-general and *chargé d'affaires* in Tunis, first secretary of the embassy at Constantinople in 1852, *chargé d'affaires* there in 1854, and in 1855 was made secretary in Persia. In November of that year he was placed in charge of a subdepartment of the foreign office, and in this capacity acted as secretary of the Paris Peace Congress of 1856. After serving as minister to Turin he was appointed in 1864 ambassador at the Prussian court, whither he went with the purpose of bringing about an alliance with Prussia against Austria, in order to pave the way for French territorial expansion. His plans, however, were thwarted by Bismarck, who inveigled him into drawing up a proposal for the annexation of Belgium by France as a *quid pro quo* for German unification. This document, published by Bismarck at the breaking out of war in 1870, served to weaken foreign sympathy with Napoleon III. Benedetti did nothing to avert the war, although his government had been advised by its Berlin military attaché, Colonel

Stoffel, of the superiority of the German armaments. In July, 1870, Benedetti met King William and Heinrich Abeken at Ems, and demanded of the former that he renounce his advocacy of the Hohenzollern prince as a candidate for the Spanish throne. The king did not meet Benedetti's insolence with sufficient spirit to please Bismarck, who thereupon transformed a mildly worded telegram from Abeken into one of insult and defiance. When this was made public France declared war. The publication of his proposal of Belgian annexation brought his public services to an end, though he tried to vindicate himself and shift the blame upon Bismarck. After 1871 he lived at Ajaccio, and in 1877 was elected a member of the departmental council in Corsica. He wrote *Studies in Diplomacy* (1896).

BERING SEA. See SEALING.

BERMUDA, or Sommer's Islands, a group of about 360 small isles and islets, lying in the Atlantic Ocean, near 32° north latitude and 65° west longitude, is a British colony, having an area of about 20 square miles and a civilian population at the end of 1899 of 16,243, of which 6282 were whites. Only about 20 of the islands are inhabited, most of the rest being merely projecting rocks. The seat of government and chief town is Hamilton (population about 1300), on Long Island, which is 677 miles from New York. The executive authority of the colony is vested in a governor, assisted by a council of 6 members appointed by the crown, while the legislative power devolves upon a council of 9 members, also appointed by the crown, and a representative assembly of 36 members, 4 members being elected from each of the 9 parishes. The colony is an important naval base; the average number of troops there during 1899 was 3647. These troops are under the command of the governor of the colony, who since 1896 has been Lieutenant-General George Digby Barker, C.B. A majority of the inhabitants belong to the Church of England. There is an attendance of about 1400 pupils in the 58 schools, of which 24 receive an annual government grant of £1277. The revenue is almost entirely derived from import duties, and the expenditure is chiefly for salaries, public works, churches, and schools. The principal crops are onions, potatoes, and lily bulbs, the exports of these in 1898 amounting to £58,373, £19,955, and £15,452 respectively. Other products are melons, pumpkins, and arrowroot. Statistics of finance and commerce are as follows:

	Revenue.	Expenditure.	Imports.	Exports.
1897.....	£35,965	£35,704	£323,148	£127,703
1898.....	38,923	39,102	351,274	113,903
1899.....	39,955	.....	394,384	125,817

The total public debt at the end of 1899 was £44,800. Of the imports in that year about one-third came from Great Britain and Canada and the remainder from the United States; the American imports were largely foodstuffs and the British textiles, liquors, and sugar. Of the exports, £111,638 worth went to the United States. In 1898 the total shipping, entrances and clearances, amounted to 471,956 tons. There are about 700 miles of telephone wire and 51 miles of telegraph, 15 of the latter being submarine. Since 1890 there has been telegraphic communication with Halifax, N. S., and since 1898 with Jamaica and the Turks Islands. Bermuda is a favorite winter resort with Americans and Canadians.

BERRIOZÁBAL, General FELIPE B., Mexican minister of war and marine, died in the city of Mexico, January 9, 1900. He was born in the state of Zacatecas, and was educated at the National School of Engineers, graduating in April, 1849. Meanwhile, he had served in the war with the United States. In 1849-52 he surveyed the states of Mexico and Tlaxcala, and subsequently engaged in many other engineering enterprises, both official and private. In 1857 and 1861 he was acting governor of the state of Mexico and of Michoacán in 1863, and toward the close of 1860 he was one of the Liberal officers taken prisoner in the civil conflict at Toluca by General Miramón shortly before the latter was defeated at Calpulalpán. After the republic was founded in 1867 Berriozábal was repeatedly called to responsible positions in both the civil and the military branches of the government. He founded the National Artillery Museum, and is said to have greatly improved the organization of the army. He was highly esteemed by President Diaz, and was popularly regarded as an able commander and staunch patriot.

BERTRAND, JOSEPH LOUIS FRANCIS, French mathematician, died in Paris April 3, 1900. He was born in that city on March 11, 1822, and at an early age entered the Polytechnic School. He became a teacher, and in 1862 was called to the chair of mathematical physics in the College of France. He was made a member of the Academy of Sciences in 1856, and from 1874 to the time of his death was its permanent secretary. Among his works are: *Calcul intégral*; *Les fondateurs de l'astronomie moderne*; *La théorie de la lune d'Aboul-Wefâ*; *Calcul des probabilités*;

Leçons sur la théorie mathématique de l'électricité; the biographies *D'Alembert* and *Blaise Pascal*. He was a brother of the archæologist Alexandre Bertrand.

BETZ, FRANZ, celebrated German baritone, died August 11, 1900. He was born at Mayence, March 19, 1835. After singing in various German cities he made his début in *Ernani* at the Royal Opera House in Berlin, where he was a prime favorite for nearly forty years, retiring in 1897. His voice was remarkable for power and sweetness, and was equal in all registers. His singing was characterized by high artistic finish and depth of feeling. He was especially famous for Wagnerian rôles, creating the part of Wotan in Wagner's *Tetralogy* at its initial production in Bayreuth in 1876. Though particularly excelling in parts requiring repose and dignity, as in Hans Sachs, he was inimitable as the fat knight when Verdi's *Falstaff* was produced in Berlin. As an oratorio and *Lieder* singer he was quite as remarkable.

BIBLE SOCIETY, AMERICAN, was founded in 1816 for the gratuitous distribution of Bibles among the destitute, since which date it has sent out 67,369,306 copies, besides a large amount of leaflets and other literature. During the past year 1,406,801 copies were issued, nearly two-thirds being sent to foreign countries, and probably 100,000 pamphlets. The society publishes the *Bible Society Record*. Secretary, Rev. William I. Haven, D.D., Bible House, New York City.

BICYCLING. See CYCLING.

BIDWELL, JOHN, a prominent Prohibitionist, died at Chico, Cal., April 4, 1900. He was born in Chautauqua County, N. Y., in August, 1819, and in 1841 was one of the first pioneers who went overland to California. He served in the Mexican War, was State senator in 1849, and in 1860 was said to be the only California delegate to the Democratic National Convention who remained loyal to the Union. In 1864 he was a delegate to the Republican National Convention. He was then elected to the 39th Congress. He became interested in the Prohibition movement, and in 1892 was the presidential candidate of that party. He received about 270,000 votes, said to be the highest in the history of the party.

BILLIARDS. The Amateur Athletic Union's control of billiards continued in 1900, and the usual championships were held, but the National Association of Amateur Billiard Players, which was formed in October, 1899, by players who rebelled against the union's assumption of government, did not cease its fight, and held a metropolitan championship tournament in the borough of Brooklyn, New York City. The Amateur Athletic Union's class B amateur championship tournament (14-inch balk-line) was held at the Knickerbocker Athletic Club, New York City, during December 4-16, 1899. It was won by Charles Threshie, Boston, all 5 games won; grand average, 7.65; high run, 74; second, J. DeMun Smith, St. Louis, 4 games; grand average, 6.19; high run, 72; third, W. W. Kellogg, Chicago, 3 games; grand average, 5.58; high run, 49. Smith broke the class B record for the best single average (for 300 points), with 11 3-27. The class A championship (14-inch balk-line, anchor nurse barred) was held at the same place, February 5-16, 1900. Won by Wilson P. Foss, Haverstraw, N. Y., all 5 games; grand average, 10.64; high run, 115; second, Wayman C. McCreery, St. Louis, 4 games; grand average, 9.34; high run, 68; third, J. DeMun Smith (graduated with Threshie, who also competed, from class B), 3 games; grand average, 7.64; high run, 54. McCreery broke the amateur record for the best single average (for 400 points), 14 22-27. The National Association of Amateur Billiard Players held its tournament for the championship of New York at the Hanover Club, Brooklyn, New York City, March 12-17 (14-inch balk-line). Ferdinand Poggenburg, of the Liederkrantz Club, won his 3 games and the match; grand average, 7.20; high run, 49; second, Frank A. Keeney, Crescent Athletic Club, 2 games; grand average, 6.56; high run, 52. It was announced that this association would give its first annual tournament for the amateur championship of America early in January, 1901. No matches between leading professional billiard players were played in 1900.

BIMETALLISM. See PRESIDENTIAL CAMPAIGN (paragraph Currency).

BINGHAM, JOHN ARENDE, ex-minister to Japan, died at Cadiz, O., March 19, 1900. Born at Mercer, Penn., he studied law, entered politics, and served eight terms as a member of Congress from Ohio. He was judge-advocate in the army under Lincoln, was one of the attorneys for the prosecution in the trial of the latter's assassins, and was one of the managers of the impeachment trial of President Johnson. He assisted in writing and introduced the fourteenth amendment to the Constitution. From 1873 to 1885 he was United States minister at Tokio.

BIOLOGICAL STATIONS. See ZOOLOGICAL STATIONS.

BIOLOGY. The closing year of the century has seen a marked increase in the number of interesting points under discussion in the field of biology, so that it is difficult to give any just estimate of the advance which has been made. The subjects which in the two preceding years occupied such an important place have

received comparatively little attention during 1900. We have had little discussion of *vitalism*, nothing notable has appeared regarding the problem of *heredity*, little advance has been made in the explanation of *regeneration*, and *hybridization* has not attracted as much notice as in previous years. But, on the other hand, a great variety of more special topics have been vigorously discussed or carefully investigated, and a few general questions have received renewed attention.

Huxley Memorial.—An event of more than usual interest was the unveiling of the Huxley memorial statue on April 28, in the great hall of the Natural History Museum, South Kensington, London, by the Prince of Wales. The occasion was a notable one, not only because of the man whom it was to commemorate, but because of the list of distinguished persons present. Addresses were made by Professor Ray Lankester, Sir Joseph Hooker, and Sir Michael Foster, and the statue was received on behalf of the trustees of the British Museum by the Prince of Wales. It is a colossal marble figure, seated, and it is said to be a good likeness. There is no inscription save the name, and dates of birth and death. The subscriptions to the memorial amounted to almost \$17,000, and came from all parts of the civilized world. Besides the statue, which is the main part of the memorial, an endowment has been provided for two medals, to be known as the "Huxley gold medals," one to be awarded by the Royal College of Science, and the other by the Anthropological Institute.

Variation.—The subject of *variation* has received a considerable amount of attention and some noteworthy contributions have been made, especially by Professor C. B. Davenport in America and H. M. Vernon in England. Professor Davenport has dealt with the quantitative study of the subject, while Mr. Vernon has endeavored to deduce some general laws from his observations on some 20,600 larvæ (plutei) of a sea-urchin (*Strongylocentrotus*). He concludes that an organism varies least when it is best adapted to its surroundings, so that the less it is adapted the more variable it becomes.

Geographical Distribution.—The old question of *geographical distribution* has been the subject of a number of communications. The most notable have been discussions as to whether New Zealand constitutes a zoological "region" by itself, or whether it is a sub-region or province of the Australian region; and as to the relationships of the American fauna. The absence of mammals in New Zealand and the presence of very characteristic birds, lizards, and molluscs are evidence that connection with Australia was very remote, if indeed it ever existed. The fauna of Africa seems to comprise two very distinct sets of animals, those allied to forms now found in India and Eurasia, and those allied to forms occurring in South America. It is probable that at least a portion of the African fauna has been derived from the same source as portions of the South American and Australian fauna.

Mammals.—There have been some important and interesting studies made of mammals, especially regarding their origin and distribution, while the preservation of the larger species has been a matter of serious consideration. Indeed, of such importance is the preservation of big game regarded, that an international conference on the subject was held in London, attended by delegates from Germany, France, Italy, Portugal, and the Congo Free State. It convened under the auspices of the British Foreign Office. The conference recommended that a special and select list of animals be absolutely protected at all times; that other animals receive protection for breeding females and young; that the sale of elephants' tusks weighing less than eleven pounds be forbidden, and that each power establish adequate game preserves and protect them from encroachment. The various governments concerned have agreed to put these recommendations in force. The chief difficulty will lie in any attempt to put resident natives under such restrictions. (See also AFRICA, paragraph Protection of Wild Animals.) In the United States our efforts to preserve our most important big game, the bison, began too late, and the numbers have been steadily decreasing. During the past year an attempt has been made to determine the number of bisons now living in the world. Mr. Mark Sullivan concludes that there are 1024, of which 684 are in captivity, and only 340 are wild or half wild. Of those in captivity, 100 are in foreign countries. The largest herd is that of the late Mr. C. Allard, on the Flathead Indian Reservation in Montana, which includes 259 individuals. The question of the *origin of mammals* has been the subject of no little discussion, paleontology leading some to believe that mammals have been derived from reptilian or reptile-like ancestors; embryology and comparative anatomy leading others to believe they have been derived from amphibians independently of the reptiles. The question is by no means settled. Mr. J. P. Hill, of Sydney, N. S. W., has published further reports of his work on the development of the marsupials, and his observations seem to lead to the conclusion that marsupials originally developed a placenta which has become absorbed in the more specialized forms.

Artificial Parthenogenesis.—By far the most noteworthy event of the year

in biology has been the publication of the results of the work of Professor Jacques Loeb (*q.v.*), of the University of Chicago, in obtaining the development of the egg of certain marine animals without fertilization. Certain newspapers took up the matter, treating it from a sensational point of view, and consequently there has been much popular misinformation spread abroad, and a natural misconception of the experiments and the light which they throw on the matter of sexual reproduction. The work of Delage had shown that a very small fragment of a sea-urchin's egg can be fertilized, and will develop without its containing even a trace of a nucleus, and he concluded that the *female* pronucleus is not useful in fertilization or necessary for the development of the parts of the organism, though it may be useful in some other ways. Loeb's experiments show that the *male* pronucleus is not necessary for fertilization, or for the normal development of the embryo, provided the stimulus given to the egg by the entrance of the spermatozoon be imparted in some other way. Loeb first experimented with the eggs of the sea-urchin, and found that by treating them with a mixture of 50 per cent. $\frac{1}{2}$ nMgCl₂ and 50 per cent. of sea-water for two hours, and then placing them in normal sea-water, they developed normally, though somewhat slowly, into plutei. He concluded, therefore, that the unfertilized eggs of the sea-urchin contain all the essential elements for the production of perfect plutei, and the only reason they do not ordinarily develop parthenogenetically is the presence or absence of ions of sodium, potassium, calcium, and magnesium. The two former need to be reduced, the two latter to be increased. During the past summer Loeb continued his experiments at Woods' Hole, and found that the eggs of star-fish and certain marine worms (*Chaetopterus*) could also be made artificially to develop parthenogenetically. He believes the development is caused in some cases by the egg losing a certain amount of water, but with the eggs of *Chaetopterus* development could also be caused by the increase in the number of potassium-ions in the sea-water, and this he calls "chemical fertilization." In all the experiments performed by Loeb it is clear he has only shown that the stimulus which the entrance of the spermatozoon gives to the ovum can be replaced by chemical or physical means, but whether such artificial stimulus is sufficient to carry the development through to the formation of a sexually mature animal is at least doubtful. And even were that the case, it is still more doubtful whether the eggs of the second generation would develop parthenogenetically. Very probably Loeb goes too far when he says the question of fertilization is removed by his experiments to the realm of physical chemistry.

BIRD PROTECTION. See ORNITHOLOGY.

BISMARCK ARCHIPELAGO, a group of islands in the Indian Ocean, belonging to Germany. It is composed of the islands of Neu Pommern, Neu Mecklenburg, Neu Lauenberg, New Hanover, Admiralty, Anchorite, Commerson, Hermit and a few other islands, with an aggregate area of about 18,000 square miles and a population estimated at 188,000, including 200 Europeans and 132 Chinese, natives from the Fiji Islands, and Samoans. The principal product of the islands is copra, of which export during the fiscal year 1899 was valued at 736,400 marks. The total imports during the fiscal year 1899 amounted to 1,060,000 marks, and the exports, 939,000 marks. The number of vessels entered during the year was 112 sailing vessels, with a tonnage of 10,188, and 20 steamers, with a tonnage of 27,260. There is regular steamship communication between the islands and Singapore, and the trade of the archipelago is entirely controlled by the German New Guinea Company.

BLACKBURN, JOSEPH C. S., who had supported William Goebel, the regular Democratic nominee for governor of Kentucky in the election of 1899, was re-elected United States senator in January, 1900. His own political future depending upon the election of Goebel and a Democratic Legislature, he was a most conspicuous figure in that exciting campaign. Mr. Blackburn was born in Woodford County, Ky., in 1838, and graduated from Centre College, Danville, Ky., in 1858. He then studied and practised law until, on the outbreak of the Civil War, he entered the Confederate army. After the war he resumed the practice of law at Versailles, Ky. His political career began with his election to the State Legislature in 1871, followed by his election to the 44th and four ensuing Congresses. In 1885 he took his seat in the United States Senate as a Democrat. Five years later he was returned, and served until the expiration of his term in 1897. An effort was made by the Republicans to invalidate his election to the Senate in 1900.

BLACK LEAD. See GRAPHITE.

BLACKMORE, RICHARD DODDRIDGE, English novelist, died January 20, 1900. Though his family were from Devonshire, a county that held his interest and sympathies throughout his life, he was born in Berkshire, at Langworth, in 1825. He was educated at Blundell's School, Tiverton, an excellent description of which is given in *Lorna Doone*, and at Exeter College, Oxford, where he received his bachelor's

degree in 1847. He studied law, and was called to the bar in the Middle Temple in 1852, after which he practised for some time as a conveyancer. His first novel, *Clara Vaughan*, appeared in 1864. Before this time he had published several volumes of poems, including *Poems by Melanter*, *Bugle of the Black Sea*, *Epullias*, and a translation of Virgil's first and second *Georgics*. The second novel, *Cradock Nowell*, appeared in 1866, and then, in 1869, came *Lorna Doone*, which, though probably the only one of his works that will live, has an abiding place in the front rank of English romantic fiction. This book combines many of the elements that go to make up a great novel. It is a pure and simple love story, portraying strong characters of real individuality and alive with human passion; it is full of incident and action; it abounds in quiet humor: and still more than any or all of these characteristics, perhaps, the charm of *Lorna Doone*, and that which marks the real genius of its author, is "the atmosphere, the beauty of the scenes that are conjured up, the vivid joy of the descriptions, the pages that seem to be torn from the book of nature, the wonderful feeling for typical English country"—the sweet Devon country—"that pervades the whole book and stamps it firmly upon the imagination." The reason that Blackmore, even in his own day, was looked upon as a one-book writer is because the standard he set in *Lorna Doone* is so high. A series of such books would have placed him among the very few fiction writers to whom the world accords first rank.

His other novels, however, are not without merit or the power to interest. *The Maid of Sker* (1872) is well worth reading; *Crips the Carrier* (1876) is full of pleasant humor, and is regarded by many as one of Blackmore's best; *Mary Anerly* (1880) is a pretty story, and *Kit and Kitty*, when it came from the press in 1889, was very well received. His other works include: *Alice Lorraine* (1875); *Erema; or, My Father's Sin* (1877); *Christowell* (1882); *The Remarkable History of Sir Thomas Upmore* (1884); *Springhaven* (1887); *Perlycross* (1894); *Fringilla* (1895); *Tales from the Telling House* (1896); *Daniel* (1897). To some extent the later works are marred by prolixity of diction and slowness of movement.

The title-page of the translation of the *Georgics* announced that it was "by a market-gardener." This was not a misnomer, for during many years Blackmore actually engaged in market-gardening, and it was with great satisfaction that he was wont to show his friends over the few acres he cultivated at Teddington. He was a scholarly man of charming and modest disposition, who loved rural life and was constant in his endeavors to keep the details of his private affairs out of the public prints. In him passed away an English gentleman of delightful personality and an English man of letters to whom the reading world will be in lasting indebtedness for at least one book—*Lorna Doone*.

BLANCHARD, ÉMILE, a zoologist and member of the French Academy, died February 11, 1900. He was born March 6, 1819, in Paris, and at the age of 14 entered the Department of Entomology of the Paris Museum as an attendant. Showing an aptitude and ability for scientific work, in 1847 he was made a member of the museum staff. He accompanied Professor H. Milne-Edwards on his expedition to Sicily, 1844-47, and in 1862 was appointed professor of entomology at the Paris Museum. In 1862 he was elected a member of the French Academy, and in 1881 was its president. In 1876 he was appointed professor in the National Agricultural Institute. A few years previously, however, he had lost his sight and was, accordingly, unable to prosecute his investigations during the latter half of his life. In addition to many papers he was the author of the following: *Histoire naturelle des insectes orthoptères, neuroptères, hémiptères, etc.* (1840); *Histoire des insectes, etc.* (1845); *L'organisation du règne animal* (1851-64); *Preuve de la formation récente de la Méditerranée* (*Comptes Rendus*, 1881).

Professor Blanchard was an authority on entomology, and a genus of *Carboniferous neuroptera* was named *Blanchardia* in his honor, while his name is connected with several fossil birds from the Miocene formation of France. He was also devoted to the study of comparative anatomy and general zoology.

BLAUVELT, CHARLES F., artist, died at Greenwich, Conn., April 14, 1900. He was born in New York in 1824, and studied under Charles L. Elliot and at the National Academy of Design, of which he became a member in 1859. In 1864 he was made a member of the Pennsylvania Academy of Fine Arts, and in 1878 was elected assistant professor of drawing at the United States Naval Academy, Annapolis. He attained some reputation through his genre paintings, among which are "The Lost Child," "Warming Up," "Preparing for School," "Waiting for the Train."

BLUMENTHAL, LEONHARD, COUNT VON, Prussian general, died December 21, 1900. He was born at Schweltdt in 1810, attended the military academies at Berlin and Culm, and in 1827 entered the German army as second lieutenant. In 1846 he was first lieutenant. In order to become thoroughly familiar with military science, he served for many years in the Artillery Guards and the division of the Pioneer

Guards. His long service on the general staff began in 1849. As member of the staff of General von Bonin he took a prominent part that year in the Schleswig-Holstein army. After the war he was sent on special military missions to England. Meanwhile, rising to lieutenant-colonel, he was in 1859 appointed aide-de-camp to Prince Frederick Charles, and subsequently colonel of the Seventy-first Infantry, and chief of staff of the Third Army Corps; in 1863 he was nominated the chief of the general staff of the combined Mobile Army Corps against Denmark. The important part that he played at Messunde and in the assault upon Düppel and, in fact, throughout the campaign showed him a general of extraordinary ability. He was consequently, promoted major-general in 1864 and received the order *pour le mérite*. When the Austrian War broke out in 1866 he became chief of the general staff of the second army of the crown prince, and distinguished himself at Sadowa and the following operations. During the war with France, Blumenthal, as chief of the general staff of the crown prince, exercised a great influence on the plan of campaign and its execution. He was one of the factors in the victory at Sedan, and guided the manœuvres attending the siege of Paris and the operations against the army of the Loire. In 1883 Blumenthal was created count, and five years later received the promotion of field-marshal. Recognized as one of the most brilliant strategists of modern Germany, he has received the highest honors from his country.

BOAS, FRANZ, professor of anthropology in Columbia University and curator of ethnology in the American Museum of Natural History, New York, was elected to membership in the National Academy of Science at its spring meeting in 1900. Dr. Boas, who is well known for his researches among the Eskimos and the Indians of northwestern America, was born at Minden, Westphalia, Germany, July 9, 1858, and studied at the universities of Heidelberg, Bonn, and Kiel, receiving the degree of Doctor of Philosophy from the last named in 1891. In 1883 and 1884 Dr. Boas was engaged in exploration and research in the regions of Baffin Land. The following winter he studied at the United States National Museum in Washington and wrote a report on his travels and investigations. Returning to Berlin, he became assistant in the Royal Ethnographical Museum and docent in geography at the university. In 1885-86 he went to British Columbia to study the Indians of that region, and has since spent considerable time in research in this field, having prepared several reports on the natives for the British Association for the Advancement of Science. Dr. Boas for two years was an assistant editor of *Science*, and from 1888 to 1892 docent in anthropology at Clark University, Worcester, Mass. He afterward became connected with Columbia University as lecturer on anthropology, and in 1899 was made professor of this subject. He has been for many years a member of the scientific staff of the American Museum of Natural History, and in 1900 was president of the American Folk-lore Society. He is the author of *Baffin Land* (1885); *The Central Eskimo* (in the Sixth Annual Report of the United States Bureau of Ethnology), and of many reports to European and American learned societies.

BOAT-RACING. See ROWING.

BOBORYKIN, PYOTR DMITRIYEVICH, contemporary Russian novelist, publicist, and critic, whose fortieth anniversary of literary activity was celebrated in November, 1900, was born on August 27, 1836, in Nizhni-Novgorod. He matriculated in 1853 in the law faculty of the Kazan University, but becoming interested in chemistry, entered the physico-mathematical faculty at Dorpat, was attracted by medicine, and took all the required subjects (both theoretical and practical) of the medical faculty. From that time, for about twenty years in succession, he studied at the universities, medical schools, museums, art schools, and conservatories in Moscow, St. Petersburg, Paris, Vienna, and where not. His courses embraced all subjects imaginable, from Roman law, political and social sciences, and philosophy, through philology, literature, and history, to history of art, harmony, solfeggio, and declamation, these latter preparatory to his directorship of a private school of dramatic art, which he conducted in Moscow in 1877. His linguistic accomplishments are quite as remarkable. From 1860 he has been an untiring literary worker, his writings (fiction, criticism, literary history, philosophy, and even chemistry) filling over 100 volumes, of which more than 30 are novels. Keen of perception, familiar with the life and literatures of most European nationalities, crammed with encyclopædic knowledge, he has the characteristic inquisitiveness of a reporter about him, and brings all this to his literary work: "to seize the moment"—i.e., to embody in fiction the slightest phenomenon of social life almost at the time of its occurrence, is a term quite current in modern Russian literature, coined originally to characterize this peculiar impressionableness of the author. His works are a chronicle in fiction, of the social, literary and historical changes in Russia in the past two-score of years. Beginning with novels in the style of the best Russian traditions of the Forties (Turgenyeff, Goncharoff, Dostoyefski), he later adopted the "protocol" method of the modern French school. His novels are made up of a mosaic of separate episodes, which he

reproduces photographically from actual life, and there is not a work of his in which some of his friends or acquaintances should not be recognized at first glance. The best of his works are: *The Evening Sacrifice*; *Solid Virtues*; *Dr. Tsubulka*; *Kataygorod*; *Vassili Terkin*; *The Princess*; and especially *Got Wiser*. For his study of the European novel in the nineteenth century see **RUSSIAN LITERATURE**.

BOERS. See **TRANSVAAL**.

BOHEMIA. See **AUSTRIA-HUNGARY**.

BOKHARA, a khanate of central Asia, under the suzerainty of Russia, lying to the west of the Pamir, between Russian Turkestan on the north and Afghanistan and the Russian Transcaspian province on the south, has an area of about 92,000 square miles and an estimated population of 2,500,000. The aboriginal inhabitants are the Aryan Tajiks, but the Uzbeks, of Turkish stock, are the dominant race. The people are Mohammedans of the Sunni sect. The capital and chief town is Bokhara, with about 75,000 inhabitants; other important towns, with approximate populations, are Karshi, 25,000; Hissar, Shahr-i-Sabz, and Khuzar, each 10,000. The ruler is the Amir Sayid Abdul Ahad, who succeeded his father in 1885. He has about 11,000 troops, some of which have been drilled by the Russians. The chief products include corn, fruits, cotton, silk, tobacco, hemp, and wine; sheep, horses, cattle, and camels are reared. The principal minerals known to occur are gold, alum, salt, and sulphur. Foreign trade, which is chiefly with Russia, Persia, Afghanistan, and India, amounts annually to some 32,000,000 roubles (nearly \$16,500,000), the imports being slightly in excess of the exports. The imports include green tea, muslins, shawls, indigo, drugs, and numerous other commodities; and among the chief exports are raw silk and cotton. The trade is almost entirely in the hands of Russians. The amir permits the importation of spirituous liquors only for the use of the Russian legation. The city of Bokhara has several manufactures of importance, and is, perhaps, the chief commercial city of central Asia; while for many years it has been famous for its numerous mosques and colleges. The trans-Caspian railway, which connects Krasnovodsk, on the Caspian, with Tashkent, in the province of Syr Daria, passes from Charjui, on the Oxus, to Novo-Bokhara, a town that has been recently built, eight miles from the capital. A branch railway over these eight miles, which was under construction, at the expense of the amir, in the latter part of 1900, was expected to be finished early in 1901. The estimated amount of freight that will be carried annually by this branch is 6,000,000 poods (about 108,000 tons). The city of Bokhara is also connected with Tashkent by telegraph.

BOLIVIA, a South American republic, is bounded on the north and east by Brazil, on the south by Paraguay and Argentina, and on the west by Chile and Peru. The capital is La Paz.

Area and Population.—The republic comprises eight departments, the total estimated area of which is 567,430 square miles. A ninth department, the Littoral, embracing 29,910 square miles and containing the port of Antofagasta, was mortgaged to Chile after the war with that country in 1879-80 and has never been redeemed. A definite Argentine boundary has been agreed upon, but not yet delimited. According to the last official estimate, the population, exclusive of some 250,000 uncivilized Indians, was something over 2,000,000. About one-half of this number are Indians, one-fourth whites (Spanish), and one-fourth Mestizos. Almost all are nominally Christian. The estimated populations of the principal towns are: La Paz, 62,300; Cochabamba, 29,500; Sucre, 27,300; Potosi, 15,900; Oruro, 15,900; Santa Cruz, 12,100; Tarija, 11,900.

Government.—By the constitution the chief executive power is vested in a president, who is elected by popular vote for a term of four years, and is not eligible for re-election. He is assisted by a cabinet of five portfolios; by a decree of December 28, 1899, changes were made in the titles of these branches of public administration, which are now as follows: foreign affairs and worship, war and colonization, finance and industry, justice and public instruction, and interior and public works. For the term beginning August 15, 1896, the president was Señor Severo Fernandez Alonso, but upon the termination of the revolution of 1899 General José Manuel Pando was elected constitutional president October 26. The legislative power devolves upon a congress consisting of a senate and a chamber of deputies, members of the former being 18 in number, elected for 6 years, and of the latter 64 in number, elected for 4 years. The eight departments, which are administered by prefects, are divided into provinces and these into cantons, the former being administered by sub-prefects and the latter by magistrates (*corregidores*). Besides local justices (*alcaldes*), there are 8 district courts and a supreme court.

The seat of government has been changeable, having been repeatedly at La Paz and at Sucre. It will be remembered that one of the causes of the revolution of 1899

was the insistence of the Alonzo government upon Sucre as the capital. After General Pando came into power he issued an executive decree declaring La Paz the permanent capital, and on February 1, 1900, the governmental departments were removed to that city from Sucre.

Army.—The standing army numbers about 2000 men, and the national guard about 80,000. Service in the militia is incumbent upon citizens between 21 and 50 years of age.

Finance.—Revenue is derived chiefly from customs; other sources of revenue are liquor taxes, silver and other minerals, and stamps. The principal items of expenditure are war, finance, instruction, and public works. The revenue and expenditure in bolivianos (the boliviano being worth 45.1 cents on October 1, 1900) have been reported as follows, the figures for 1898 and 1899 being official estimates:

	1895.	1896.	1897.	1898.	1899.
Revenue.....	4,594,033	5,266,543	4,840,300	5,194,593	7,973,190
Expenditure.....				5,714,793	8,104,200

The government seems to have considerable difficulty in the collection of revenue. At the end of 1897 the external debt, due to Chilean creditors, which originally amounted to 6,500,000 bolivianos, was 1,084,555 bolivianos; on the payment of this 40 per cent. of the customs collected at Arica, one of the ports the privileges of which are allowed Bolivia by Chile, are applied. In 1898 the internal debt amounted to 3,707,541. There are two banks of issue, three mortgage banks, and two other banks; the bank-note circulation amounts to about 6,600,000 bolivianos.

Industries and Commerce.—Large areas of Bolivia are suitable for cultivation, but agriculture has made little progress. Only slow development can be expected, of course, in a country so sparsely inhabited and possessing so few good roads; but to a great extent the unprogressiveness is due to the natural inefficiency of the people—a too common Latin-American characteristic—while the Bolivians have not the excuse of the enervating tendency of a tropical climate, for the elevation of the country places it practically in the temperate zone. Manufactures of any considerable importance are almost unknown. Full and accurate data of production and commerce cannot be obtained, as the official statistics are fragmentary, and large shipments of silver and rubber are not infrequently made at the river ports without the knowledge of the customs authorities. The important products include rubber, cacao, cinchona, and coffee; while wheat, corn, beans, and potatoes are grown for domestic consumption. Sugar-cane grows readily, but it is cultivated in only a small way, and the product is distilled. Hitherto small advantage has been taken of the valuable forests or of the rich grazing lands, though cattle, sheep, and llamas are fairly numerous.

Bolivia's real wealth at present is its mineral resources, which are very large, and include silver, copper, tin, lead, zinc, gold, antimony, bismuth, and borax. The most important metal mined is silver, Bolivia standing third among the silver-producing countries, with Mexico and the United States in the first and second places respectively. The silver production actually reported in 1894 amounted to over 14,500,000 ounces, while the total estimated output for that year was 22,000,000 ounces. During the next two years there was a decline in the production, but in 1897 the reported output was about 15,000,000 ounces. The principal silver districts, where the mines are largely in the hands of foreigners, are Huanchaca, Oruro, Colquechaca, and Potosi. The estimated yield of the Potosi mines from their discovery in 1545 down to 1864 is \$3,000,000,000. Second in importance to silver is tin, in the mining of which considerable progress has recently been made, though the Bolivian metal is not considered to be of first quality. Where silver is worked tin is usually found, but the principal tin-producing districts are on the eastern cordillera of the Andes, extending a distance of 300 miles, and divided into four distinct groups—La Paz, Oruro, Potosi, and Chorolque. The estimated yearly output has been about 4000 tons, but the estimated export for 1899 was about 6000 tons. The very rich copper veins of Bolivia are not worked at all, except at Corocoro, near Lake Titicaca, and there only in a primitive manner. The annual copper export, in the form of barilla, amounts to about 3000 tons. The silver and tin are exported through Antofagasta, and the copper through the Peruvian port Mollendo. The gold output is almost limited to washings by Indians. Though borax, antimony, and bismuth exist in large quantities they are mined but little and very antiquated methods are employed. During 1899 there were granted 2754 mining claims.

The principal imports are provisions, hardware, alcoholic liquors, textiles, wearing apparel, and furniture. The import trade is largely in the hands of Germans, and a large amount of German capital has been invested in the country. The leading exports are silver, tin, copper, rubber, wool, hides and skins, cacao, coffee, and cinchona. Commerce passes through the ports of Arica and Antofagasta (Chile),

Mollendo (Peru), and the northeastern river ports of Villa Bella, Puerto Suarez, and Puerto Alonso. Early in 1900 it was reported that several minor customs ports had been created on Lake Titicaca for facilitating the export of mining products and rubber and other produce. The rubber export, which is increasing, was reported to amount in 1898 to 3,041,542 kilogrammes (6,705,383 pounds), valued at 13,223,300 bolivianos (currency); of this amount about 2,000,000 kilograms came from Acre. The following amounts, representing bolivianos, have been reported for the foreign trade: 1897, imports and exports, 24,456,000 and 25,500,000 respectively; 1898, imports, 38,400,000, and exports, 18,000,000.

Communications.—A great lack of adequate transportation facilities, as suggested above, is one of the chief hindrances of Bolivian development. The roads are few and their condition primitive, though efforts are being made for their improvement. A railway connecting the Chilean port Antofagasta with the frontier town Ascotan extends nearly 500 miles in Bolivian territory, running from Ascotan to Uyuni and Oruro, with a branch to Huanchaca. Several lines have been projected, and in the early part of 1900 the government appropriated 120,000 bolivianos for the preliminary studies of three railway lines—namely, from Oruro to La Paz and thence to Lake Titicaca, there to connect with the Peruvian road running to Mollendo; from Oruro to Cochabamba; and from Challapota to Colquechaca. It was said that a further sum of about 50,000 bolivianos would be appropriated for the surveys of a railway from Potosi, near Challapata, to the Argentine frontier. Sundry recommendations for the construction of railways were made by the president in a special message to the congress in August, 1900. The following cities are connected by telegraph: Puno (a Peruvian town on Lake Titicaca), La Paz, Oruro, Cochabamba, Colquechaca, and Sucre, while another line runs by way of Sucre and Potosi from the Argentine frontier to the Pacific coast, the total length of telegraph line being 4124 miles, and the number of telegraph offices 117.

Religion and Education.—The state religion is Roman Catholic, but other forms of faith are tolerated. Primary instruction, which is free and nominally compulsory, is controlled by the municipalities, the number of public primary schools in 1897 being 366, for the maintenance of which over 139,000 bolivianos were appropriated. Private primary schools numbered 121 and industrial schools 82, the total enrolment of pupils in all schools being 36,690. In addition there are a number of mission schools taught by the priests. For secondary education there are 8 colleges and 9 other institutions, with upward of 2000 students, and for higher education 6 so-called universities, having about 500 students. At La Paz a military college has recently been founded, and at Oruro a college of civil and mining engineering. In 1900 the reported number of periodicals and newspapers published in Bolivia were 28, of which 9 were in La Paz.

Amnesty.—Early in 1900 the Bolivian government invited all who had left the country on account of the civil war, by which, in the fall of 1899, General Pando succeeded Señor Severo Fernandez Alonso as president, to return to their homes, and gave assurances of complete safety.

Acre.—The region of the Acre, or Aquiri, River in northern Bolivia has been a disputed territory between that republic and Brazil; but in May, 1899, an agreement was announced by which Brazil practically conceded to Bolivia the latter's claim to the disputed area. A protocol was formally signed on the 30th of the following October, and a joint commission was appointed to rectify the frontier in accordance with the treaty of 1867. Bolivia had established a customs house at Puerto Alonso, on the Acre River, and according to the protocol, was allowed to collect customs duties pending a final settlement. During 1899 and 1900, however, there existed not a little misapprehension and confusion with regard to the status of the Acre region. This district, which has only recently been settled, through the discovery there of valuable rubber forests, is widely separated from the more thickly populated portions of Brazil and Bolivia, and accordingly reports of occurrences in the region have been few and in large part vague. It appears that an insurrection, or secession, that was attempted in the summer of 1899, apparently on account of Bolivian taxation, was not regarded as serious, and was simply alluded to as "misguided" by the legislature of the Brazilian state of Amazonas, which conceived the district to be a part of its territory. In December, 1899, however, the so-called republic of Acre was set up, and the political condition ensuing in the summer of 1900 was anomalous; for the governor of Amazonas had announced the entire pacification of the district, the president of Bolivia had proclaimed a state of siege in the region of the Acre and Purus rivers, and the republic of Acre had petitioned Argentina for recognition as an independent government. Brazilian and Bolivian troops were sent to the scene of the trouble, but no fighting of a serious nature took place, as the Acre government was practically destitute of military facilities. By the 18th of August the Bolivian troops had crushed the rebellion and taken Puerto Alonso, but they remained in the district in order to prevent any new attempt at secession. The population of the district has

been estimated at about 50,000. Late in November, 1900, Señor Fernando E. Guachalla, the Bolivian minister to the United States, stated that there was no boundary dispute between his country and Brazil. See SOUTH AMERICA.

BORAX. The yield of borax in the United States in 1899 was 40,714,000 pounds, worth \$1,139,882, as compared with 16,000,000 pounds in 1898, valued at \$1,120,000. This great increase is due to improved processes of manufacture and the discovery of new mines, which have resulted from an increased demand for boric acid and borax in the arts. The greater part of the output is derived from the colemanite deposits of California, while smaller amounts are obtained from marsh deposits in California and elsewhere. The borates, commercial borax, and boric acid used in America are now furnished almost entirely from American sources, and nearly the entire output comes from the Borax Consolidated Company, Limited, its production for the year 1899 being 24,068 short tons.

BORNEO, an equatorial island of the Malay Archipelago, is the third largest island in the world, being about 850 miles long and 600 broad, and having an area of about 300,000 square miles, a territory nearly as large as Texas and Louisiana combined. About two-thirds of the island, embracing the western, southern, and most of the eastern coasts, is in possession of the Netherlands, and the remainder, comprising British North Borneo, Brunei, and Sarawak, is under British protection. The population, which has been estimated at 1,846,000, is made up of various races—Malays, Kyans, Dyaks, Bugis, Negritos, Kanowits, Pakatans, Chinese, and others. The soil is fertile and adapted to the cultivation of all tropical products, and valuable timber is abundant. The mineral wealth of Borneo includes gold, iron, coal, mercury, antimony, marble, petroleum, tin, copper, and diamonds. Among the exports are sago, beeswax, camphor, edible birds' nests, rattans, tobacco, pepper, gold, spices, drugs, dyes, rubber, gutta-percha, diamonds, antimony, and tortoiseshell. The leading imports are opium, tea, cotton textiles, and brass and iron ware.

Dutch Borneo has an estimated area of 212,737 square miles and an estimated population (1897) of about 1,181,000. The coast districts are largely under Dutch influence, important settlements being at Sambas, Banjarmasin, Koti, Pontiana, Succadana, and elsewhere, but the interior, which to a great extent is not well known, is practically under the control of the natives.

British North Borneo, having an estimated area of 31,106 square miles (about the size of South Carolina) and some 900 miles of coast line, occupies the northeastern part of the island. The inhabitants, who number upward of 175,000, consist chiefly of Mohammedan settlers along the coast and aboriginal tribes in the interior. The country is a British protectorate, but is governed by the British North Borneo Company, which holds grants from native sultans and a royal charter from the British government. The territory is administered by a governor (Hugh Charles Clifford in 1900, who, however, resigned in September), who is assisted by a council and by several official residents. The principal towns are Sandakan (the seat of government), Gaya, Kudat, Silan, and Mempakol. There are a Protestant and a Roman Catholic mission. In 1889 the colony of Labuan was placed under the administration of the British North Borneo Company; and in August, 1899, pursuant to a native petition, it was decided to occupy the interior district of Tambunan, which has an area of about 500 square miles, with 25,000 inhabitants, and which was to be placed under a British resident. There is a military force of 350 natives under European officers. Statistics of finance and of commerce, expressed in dollars worth a little less than 50 cents, United States money, have been reported as follows for fiscal years:

	Revenue.	Expenditure.	Imports.	Exports.
1898.....	457,820	642,178	2,419,087	2,881,851
1899.....	542,919	410,290	2,456,999	3,439,560

The colony is self-supporting, and there is no public debt. About 1,000,000 acres have been leased by the government for agriculture. The exports include those mentioned above for Borneo, the most important being leaf tobacco, which amounted to \$1,686,173 in 1897 and \$1,388,666 in 1898. The trade is chiefly with Great Britain by way of Singapore. There is telegraphic communication between Sandakan and the coast, which is connected with Singapore by cable. A metre-gauge railway fifty-two miles in length is under construction from Brunei Bay into the interior. Under the British North Borneo Company, though the territory on the whole appears to be in a fairly prosperous condition, the natives still make occasional disturbances. In January, 1900, the British suppressed a small insurrection, and in April there was fighting at Kudat; on the 28th of the month this town was raided and nearly forty persons killed, of whom more than half were rebels.

Brunei, a territory on the north coast, lying to the southwest of British North Borneo, has an area that is variously estimated, but that several authorities place at

3000 square miles. The estimated population is about 50,000. The country since 1888 has been under British protection, but the internal administration is in the hands of a native sultan, Hassim Jalud Alam Akamadin, who is assisted by various chiefs. The capital and chief town, Brunei, has been called "the Venice of the East," since it is built on piles and partly on islands in the Brunei River. The principal export is sago, but there is little trade and the revenue is small.

According to a British consular report, the year 1899 marked a retrogression in the commercial and social conditions of Brunei. Many families have left the protectorate in order to avoid the exorbitant demands of tax collectors and money lenders, and to escape the seizure and sale of women and children into slavery. It was thought that although the country has valuable agricultural and mineral possibilities the population would soon be depleted to little more than the semi-independent tribes of the remote districts.

Sarawak, lying on the north coast, southwest of Brunei, was constituted an independent state in 1888 under the administration of Rajah Sir Charles Anthony Brooke and under the protection of Great Britain. In 1842 Sir James Brooke obtained from the sultan of Brunei part of the present territory of Sarawak, and thereafter, under the title of rajah, exercised a rule that was as praiseworthy as it was picturesque, until he was succeeded in 1868 by his nephew, the present rajah. Various territorial additions have been made to Sarawak, so that now the estimated area is 50,000 square miles and the estimated population 500,000. The chief towns are Kuching and Sibü; at the former there are Anglican and Roman Catholic missions. The products are similar to those of North Borneo. There is a flourishing trade that is almost entirely in the hands of Chinese. They have not, however, control of all the resources of the country, and large areas of promising land await European investors. The revenue is derived mainly from monopolies on opium, spirits, pawnbroking, and gambling, and from customs. Statistics of finance and commerce, in dollars worth a little less than 50 cents, have been reported as follows:

	Revenue.	Expenditure.	Imports.	Exports.
1898.....	638,188	543,506	2,906,143	3,367,141
1899.....	851,438	843,230	3,281,609	4,476,066

The consular report quoted above, setting forth the unsatisfactory condition of Brunei, stated that the advance of prosperity, though slow, is steady in Sarawak under the rule of Rajah Brooke, who "regards his position as a trust held by him for the benefit of the inhabitants." Accordingly, he exercises a wise caution in the introduction of occidental ideas and customs. But the civilizing process maintained by him and his assistants is most promising.

BORNU, an African state, bounded by the native empire of Sokoto on the west, Sahara on the north, and German Cameroon on the east. Its area is estimated at 50,000 square miles and its population at 5,000,000. The capital is Kuka, a town of some commercial importance, and with a population of about 60,000, situated on the west shore of Lake Tchad. The soil is well watered and supposed to be rich in minerals. Bornu is governed by an absolute sultan or sheikh, assisted by a council of military chiefs. Since January, 1900, it has been under British protection as a part of the newly established Northern Nigeria Protectorate. See **NIGERIA, NORTHERN**.

BOSNIA and HERZEGOVINA, two Ottoman provinces lying to the south of Hungary between Dalmatia and Serbia, nominally belong to the Ottoman Empire, but are occupied and administered by the Austro-Hungarian government under the terms of the treaty of Berlin (1878). Their total area, including the sanjak of Novi-Bazar, is 23,571 square miles and their population, according to the census of 1895, was 1,568,092, of whom 673,246 belonged to the Oriental Orthodox Church, 548,632 were Mohammedans, and 334,142 Roman Catholics. The chief occupation is agriculture, in which about 88 per cent. of the population were engaged in 1895. The soil is very fertile, but the methods employed in cultivating it are primitive. The principal products are wheat, maize, barley, oats, rice, millet, buckwheat, potatoes, flax and hops. Fruit is abundant, but the vine is cultivated in Herzegovina only for home consumption. Tobacco is a government monopoly, and the output of the government factories for 1898 amounted to 33,000,000 cigarettes and 70,000,000 packets of tobacco. The provinces are also very rich in minerals, the principal of which are coal, iron, copper, and manganese. The mining industry is mostly controlled by the government. The principal articles of commerce are cattle and skins. The budget estimates for 1900 were: Receipts, 41,654,881 kronen, and expenditures, 41,526,368 kronen. The sum of 7,302,000 kronen has been appropriated for the increase of the military forces. The native army numbers over 6000 men on a peace footing, and the Austro-Hungarian army of occupation numbers over 21,000 men. The educational institutions of the provinces consist of 943 elementary schools, 1 higher gymnasium, 2 gymnasia, 4 commercial schools, 2 seminaries and 1 training

college for teachers. The provinces have 545 miles of railway and 1530 miles of telegraph lines. The capital and seat of the government is Sarajeno, with a population of 38,083. The administration of the provinces is directed by the imperial government of Austria-Hungary through the Bosnian bureau, at the head of which is the minister of finance at Vienna. The government consists of three departments: for internal affairs, finance, and justice. There is also an advising body composed of the prelates of Sarajeno and 12 members elected by the people. The sanjak of Novi-Bazar is administered by Turkish officials.

BOSTON PUBLIC LIBRARY, in Boston, Mass., consists of a central library, on Copley Square, housed in one of the most beautiful buildings of its kind in the United States; 10 branch libraries, with considerable permanent collections of books, 5 reading-rooms, which are also delivery and deposit stations, and 14 delivery and deposit stations. The library delivers books to certain public schools, fire-engine houses, reformatory institutions, and the like, making a total, besides the central library, of 71 agencies on February 1, 1900, the close of the fiscal year. The total collection of the library on that date was 746,383 volumes, the increase for the year being 30,333 volumes, of which 7474 were by gift. Among notable additions were books obtained through gift and library purchase at the sale of the library of the late Anatole de Montaiglon, of the École de Chartes, covering the field of archaeology, history, and general literature, especially French and Italian literature of the Renaissance. It is said that the Boston library handles a larger circulation than any other library in the world, receiving applications for books from persons in many of the Eastern States. Mr. Herbert Putnam, however, in his report, submitted after retiring from the librarianship, called attention to the inadequacy of the income of \$13,000, received during 1899-1900, of which nearly a third was in cash gifts, to maintain the collection in its traditional position as a great storehouse containing all the important books published. The successor of Mr. Putnam, now librarian of Congress, is Mr. James L. Whitney, former chief of the catalogue department, who assumed his official position about the beginning of 1900.

BOTANY. The same increased degree of activity has characterized the progress in botany during the past year as has been manifested during the last decade. A prominent American botanist, whose name has been familiar to every worker in this science for many years, recently stated that a few years ago the greater part of our American botanical literature representing research was presented in the form of notes, whereas at the present time one is bewildered with the length of articles of an original and extremely technical nature. In this respect American botany has changed as much as any other science within a comparatively short time. The older botanical text-books, so long in vogue, were rather noted for their stability and conservatism in methods of presenting teaching material—a feature which indicated a limited amount of progress and activity in the several branches of this science. At the present time, however, new text-books are continually being brought out by publishers which represent radical changes in the nature of the subject-matter presented and in the methods of handling the same. These works are largely intended for secondary schools, although many are adapted for colleges, and they are superseding very rapidly the older text-books which have been in vogue so many years. The activity in systematic botany continues, especially the study of the floras of those countries which have not heretofore been explored. There appears to be a tendency in some quarters to give a more detailed study to the floras of explored localities and to raise well-known forms and varieties to the rank of species. The extensive systematic work known as *Engler und Prantl Pflanzenfamilien* and started some years ago is complete now, with the exception of the ferns, horsetails, mosses, and liverworts and lichens; and Engler has recently announced his intention to begin publishing a comprehensive work, entitled *Das Pflanzenreich*, which is to be a conspectus of the plant kingdom, and will contain a critical enumeration of all orders, families, genera, subgenera, species, and varieties. It is of interest to note that the estimated number of plants at present known are as follows: Flowering plants, 121,961; cryptogams, 74,586, this number including 970 species or forms of bacteria; 14,054 species of algæ, 42,860 species of fungi, 5600 species of lichens, 7650 species of mosses, and 3452 species of ferns, etc. The two classes together aggregate 196,547 species of flowering and cryptogamous plants; and while this number, however, might not agree with every botanist's estimate, it is not far from the truth. At the present time it is difficult to ascertain in some groups just what constitutes a species; and especially is this true in regard to bacteria. At the time of Linnæus, or during the latter part of the eighteenth century, the total number of plants known was about 10,000 species, of which one-tenth were cryptogams. Outside of the work being done in systematic botany in America, which still claims a good share of the botanists' attention, numerous investigations are being made in cytology (study of the cell), ecology (plant relations), vegetable pathology and physiology. The numerous pub-

lications on cytology are extremely elaborate and technical, and furnish excellent examples of modern methods of technique in histology. The results of cytological investigations still leave much to be desired, and no generalization touching upon such fundamental questions as heredity, etc., can as yet be made along this line of research. Ecology offers to every student a wide field for investigation, and some of the results of studies in this field furnish good subjects for courses of instruction in botany, attempts having already been made to incorporate ecological features in the latest text-books of botany for secondary schools. The study of ecology brings the student into intimate connection with nature out of doors, and does not necessarily involve research in the close confines of the laboratory. The work in vegetable pathology is growing more important each year, and remarkable progress is being made in this direction. This line of investigation especially appeals to the American investigator's temperament, as it is largely utilitarian in its tendency and has an important bearing on the development of our enormous resources. It is especially valuable in rendering great aid to the most fundamental of all industries, agriculture, and the results of pathological investigation are to a large extent comprehended and appreciated by intelligent agriculturalists. Investigations in this field have already saved millions of dollars to those engaged in practical agriculture, since methods of treatment have been devised which will practically control the ravages of disastrous fungus diseases at comparatively small expense. Much pathological work is also being done abroad each year, but the results of European investigation in this direction are not so practical; and, moreover, a much longer time is required to introduce a new method among the conservative peasants. The equipment, amount and quality of the work in vegetable pathology is constantly being improved in the United States, and some important contributions to this subject have appeared during the past year. In vegetable physiology there is much more being done than heretofore. Considerable attention is being devoted to the study of irritability, metabolism, and the effect of toxicity of acids, salts, etc., upon plants. The comparatively recent establishment of the New York Botanical Garden, with its extensive laboratory and staff of workers, affords ample opportunities for work in plant physiology and other allied branches of botany. This is, however, only one instance which indicates progress in botanical equipment and opportunities of investigation, inasmuch as throughout the world there are decided improvements in the facilities for botanical study and research, and nowhere is the progress more marked than in the United States.

Botanical Societies.—The fourth annual meeting of the Society for Plant Morphology and Physiology was held with the American Society of Naturalists at Johns Hopkins University, Baltimore, Md., December 28-29, 1900. In addition to the presidential address of D. P. Penhallow, eighteen papers were presented and two special lectures, describing the progress made in the study of bacterial diseases of plants and in cytological investigation, were given. The sixth annual meeting of the Botanical Society of America was held at Columbia University in New York City, June 26-28, 1900, in connection with the American Association for the Advancement of Science. Fifteen papers were presented. Section G (Botany) of the American Association for the Advancement of Science met at Columbia University, New York City, June 25-29, 1900. Twenty-three papers were presented. A symposium on the plant geography of North America, including eleven papers, was also presented, and a special memorial programme in honor of John Torrey, by the Torrey Botanical Club, formed a part of the proceedings.

BOTHA, General LOUIS, on the death of General Joubert succeeded as commander of the Boer army. Though but 36 years old, his victories at Colenso and Spion Kop made him a recognized leader. Like Cronje, a farmer and a statesman as well as soldier, he was a raiser of sheep and cattle in the Vryheid district of the Transvaal and a prominent member of the *Volksraad* at Pretoria. General Botha was born at Greytown, Natal, and won his first military successes under Lucas Meyer in the Kaffir campaign. He was made officer at the beginning of the present war, and distinguished himself at Colenso and Spion Kop. In April, 1900, when General Roberts tried to dispose his twenty thousand troops so as to prevent the escape of the five thousand Boers who were investing Wepener, Botha, eluding the British soldiers, withdrew his entire army and its supplies and furnished hard rear-guard fighting to the pursuing cavalry under General French and infantry under General Hamilton. (See TRANSVAAL.) During the two following months Botha kept up the courage of the Boers by incessant action and slight successes. His retirement from the position of commander-in-chief in September showed that the character of the struggle had changed from regular war to that of guerilla warfare.

BOWDOIN COLLEGE, Brunswick, Me., in 1899-1900 had 35 instructors and 372 students and a library of over 98,000 volumes. The income for the year was \$72,000. See UNIVERSITIES AND COLLEGES.

BOWLING. The American Bowling Congress, organized in 1895, has reconstructed the bowling rules on a plan now accepted in practically all the important tournaments. The tournaments, major and minor, held throughout the United States are innumerable, and the widespread popularity of the alley game is abundantly shown by the space devoted to the sport in the daily press. There were practically no tournaments of a truly national character held during 1900, but this is a matter of little concern compared with the widespread practice of the game.

BOXERS. See **CHINESE EMPIRE.**

BOXING and WRESTLING. The national amateur championships in boxing and wrestling are held annually under the auspices of the Amateur Athletic Union, which aims to conduct the two sports on as high a plane as possible and to rescue them, especially boxing, from the disgraces of the prize ring. The national boxing champions for 1900 were as follows: Bantam weight, 105 pounds and under, Wm. Cullen, Union Settlement A. C.; feather-weight, 115 pounds and under, H. Murphy, St. Bartholomew's A. C.; light-weight, 135 pounds and under, J. Hopkins, U. S. A. C.; middle-weight, 158 pounds and under, W. Rodenbach, New West Side A. C.; heavy-weight, over 185 pounds, J. P. Knipe, Pastime A. C.—all of New York City. Special class, 125 pounds and under, J. L. Scholes, Toronto A. C.; 145 pounds, J. J. Dukelow, Rochester (N. Y.) A. C. Wrestling: Bantam, W. Nelson, St. George A. C.; feather, J. Renzland, St. G. A. C.; special, 125 pounds, Aug. Kurtzman, St. George A. C.; light, middle, and special, 145 pounds, Max Wiley, Rochester A. C. The State of New York repealed the Horton Boxing law in 1900, and forbids boxing exhibitions after September 1.

BRABANT, EDWARD YEWD, British general and politician, was born in 1839, and entered the Second Derby Militia in 1855. In 1856 he enlisted in the Cape Mounted Riflemen, from which he retired in 1870 with the rank of captain. Settling in East London, Cape Colony, he represented the town in the Cape Parliament in 1873, 1882, and 1888. In 1878 he had been made commandant of colonial forces and in 1879 colonel of the Cape Yeomanry. In 1897 he became president of the South African League. Made brigadier-general early in the Boer War, he was put in command of the mounted colonial forces and sent to operate against the Boers in North Cape Colony. When Lord Roberts began the invasion of the Orange Free State General Brabant led one of the three columns that drove the Boers northward across the Orange River, defeating them repeatedly. After the taking of Bloemfontein he operated in the northeastern part of the Orange Free State, taking many towns and pursuing the scattered guerilla commandos of Olivier, De Wet, and Delarey.

BRAZIL, the largest republic in the world, except the United States, occupies the central and eastern part of South America, between the parallels 4° 30' N. and 33° S. The capital is Rio de Janeiro.

Area and Population.—The country comprises twenty states and a federal district, the total estimated area of which is about 3,209,000, larger even than the continental area of the United States, which, exclusive of Alaska, is but 2,970,000 square miles. Large areas of Brazil are not only undeveloped, but practically unexplored; in the states of Amazonas and Matto Grosso there was in 1890 an average of only one person to each five square miles. At present the average, at least in Amazonas, is somewhat higher. According to the census of 1890, the total population of the country was 14,333,915, but a subsequent estimate places it as high as 17,500,000. The white inhabitants and those of mixed race are about equal in number, while there are some 2,000,000 negroes, chiefly in the eastern states, and about 400,000 Indians, who are most numerous in the northern states. White population predominates in the seaports. Immigration is encouraged. The number of immigrants in 1897 was stated to be 157,948, of whom over 96,000 were Italians and over 24,000 Portuguese; the number in 1898 was 53,822, of whom over 33,000 were Italians, about 11,600 Portuguese, and nearly 6000 Spaniards. Brazil is the only Portuguese-speaking country in America. For an account of the trouble in the Acre region see **BOLIVIA** (paragraph Acre).

Government.—By the constitution the chief executive authority is vested in a president, who is elected by popular vote for a term of four years, and is not an eligible candidate for the ensuing term. He is assisted by a cabinet of six members, who are nominated by him, hold office during his pleasure and are not responsible to the congress. He is commander-in-chief of the army and navy, and with the consent of congress appoints the members of the supreme tribunal of justice and the diplomatic ministers. The president in 1900 was Senhor M. F. de Campos Salles, who was inaugurated November 15, 1898. The legislative power devolves upon a congress, consisting of a senate and a chamber of deputies, members of the former being elected by popular vote for nine years to the number of three for each state and the federal district, and of the latter by popular vote for three years in the proportion of one deputy for each 70,000 inhabitants. No state, however, may have

less than four deputies. The present number of deputies is 212. The separate states maintain their own executive, legislative, and judicial authorities and have the power of imposing export duties; but import duties, values of postage and other stamps, and bank-note circulation are determined by the federal government. Administrative authority in the federal district rests with a prefect appointed by the president and a council elected by the citizens of the districts. All citizens at least twenty-one years of age are legal voters, except illiterates, beggars, ecclesiastics under vows of obedience, and soldiers in actual service. Besides local magistrates, there are courts of first and second instance, an appellate court at each state capital, and a supreme tribunal of justice at Rio de Janeiro.

Army and Navy.—There is compulsory military service of three years in the regular army and three in the reserve. According to a report published in the *Rio News* in the spring of 1900, the non-commissioned officers and men in the regular army at that time numbered 14,658, forming 40 battalions of infantry, 14 regiments of cavalry, 6 regiments of field artillery, and 6 battalions of siege artillery. A proposed reorganization of the infantry would give that branch of the service nearly 500 commissioned officers. The national militia has been reorganized.

The principal vessels in the Brazilian navy are classified as follows: 2 third-class battle-ships, 2 second-class cruisers, 2 third-class cruisers, 3 torpedo cruisers, 8 first-class torpedo boats, 6 third-class torpedo boats, 5 river monitors, 1 coast-defence vessel. Two of the newest vessels are the sister armor-clads *Marechal Floriano* and *Marechal Deodoro*, which have been built at La Seyne. In February, 1900, the latter vessel arrived at Rio de Janeiro. Its length is 267.3 feet; maximum draught, 13½ feet; displacement, 3162 tons; horse-power, 3400; speed, nearly 14 knots, and its armor varies from 3.9 inches to 11.8 inches in thickness.

Finance.—Revenue is derived chiefly from import duties; other sources are railways, ports, telegraphs, stamps, and excise. The largest expenditure is for the department of finance, the departments of agriculture, war, and marine ranking next in order. According to careful estimates published in the United States consular reports for June, 1900, the revenue and expenditure in milreis (currency), with equivalents in United States money have been as follows:

	1897.	1898.	1899.
Revenue. . . .	353,302,000	\$55,300,492	340,727,000
Expenditure. . .	432,685,000	68,038,999	\$49,676,098
			310,500,000
			\$48,725,831
			49,576,000

The inconsistency in the foregoing equivalents is due to the depreciating value of the paper milreis, which at par is worth 54.6 cents, but which in 1900 was rated at only about 15 cents. If the budget equilibrium is to be restored and full payments on the debt resumed, with the revenues remaining as they have for the last few years, the annual administrative expenditure will have to be reduced to about \$31,632,000. The only alternative to such a reduction seems to lie in an increase of duties unaccompanied by a decrease in importations—a condition that probably could not be attained—or in an appreciation of the paper milreis. With the latter end in view the volume of the paper currency is being reduced. In his message to congress, May 4, 1900, the president reported the revenue and expenditure for the fiscal year as follows: Revenue, 19,416,706 milreis gold and 302,693,000 milreis paper; expenditure, 14,092,046 milreis gold and 225,942,225 milreis paper. The estimated revenue and expenditure for the fiscal year 1901 were reported: Revenue, 46,191,667 milreis gold and 278,565,000 milreis paper; expenditure, 28,347,668 milreis gold and 312,938,000 milreis paper.

In 1900 the foreign debt payable in gold was \$209,173,000, an amount that will be increased by \$24,332,000 when the funding loan arrangement is completed in July, 1901. The funded internal debt amounted to 619,639,000 milreis (\$337,322,894 at par, \$92,745,850 at the rate of exchange in 1900). The estimated floating debt outstanding at the beginning of 1899 was 299,473,000 milreis (\$163,512,258 at par, \$44,920,950 at 1900 exchange). Paper money outstanding in 1900 amounted to 737,800,000 milreis (\$402,838,800 at par, \$110,670,000 at 1900 exchange). Public finance in Brazil has for a number of years been in a very unsatisfactory condition. The depreciation of the paper milreis led the government in 1897 to institute measures for reducing the circulation by the withdrawal of notes. This, with various financial complications, brought about a rise in the value of the milreis in the first half of 1900. In the autumn the financial situation became so critical that seven banks—three in Rio de Janeiro, three in Pará, and one in Santos—with an aggregate capital of \$42,000,000, suspended cash payments. The government, which had enacted a law authorizing the issue of 100,000,000 milreis of 3 per cent. bonds, guaranteed by assets of the Bank of the Republic and redeemable in five years, took control of that bank upon its suspension of cash payments (September 12), for such a time as would be

required for the complete redemption of the bonds. The bank reopened on November 5.

Industries and Commerce.—The principal industry of Brazil is agriculture, but immense areas of tillable land are undeveloped. The chief crop is coffee, and other important products are sugar, tobacco, cotton, rubber, yerba maté (Paraguay tea), cacao, maize, beans, and nuts. Sugar culture is especially important in the state of Pernambuco and cattle-raising in Rio Grande do Sul. In the coast districts there are numerous manufacturing interests, the manufacture of cotton and the production of rum and alcohol being especially on the increase. The flour industry, using largely Argentine and Uruguayan wheat, is increasing, the number of barrels produced in 1898 being 643,250 and in 1899, 790,700. Various minerals occur, including gold, silver, lead, iron, zinc, manganese, mercury, coal, copper, and diamonds, but no great efforts have been made toward mineral development, though it is estimated that 40,000 carats of diamonds are produced annually in Bahia and Minas Geraes, and that from the latter state 143,000 ounces of gold were exported in 1899. Recently more attention has been paid to gold mining, and a company has been formed to work the diamond mines, as distinguished from the river beds, near the Santa Maria River in Minas Geraes.

Foreign commerce, which is mostly with Great Britain, the United States, Germany, and France, in both imports and exports was unsatisfactory in 1899, and the commercial and financial stringency of that year continued in 1900. It seems that the purchasing power of the people, especially in the coffee states, has seriously decreased, while the import duties by constant increase have in many cases become prohibitive. These duties, which are sometimes 80, 100, or 120 per cent. *ad valorem*, are especially high on spirituous liquors, tobacco, matches, cotton textiles, provisions, drugs, and patent medicines; but machinery, tools, and agricultural implements are lightly taxed. On January 1, 1899, 10 per cent., and on January 1, 1900, 15 per cent. of the customs duties became payable in gold; this practically represents a 50 per cent. increase. Imports accordingly declined, the customs receipts in 1899 being \$4,172,000 less than in 1898. The principal imports include cotton and woollen textiles, iron and steel ware, machinery, jerked beef, flour, and other provisions, alcoholic liquors, cattle, coal, timber, and petroleum. The exports are almost entirely limited to the raw products of the soil. In 1897 the total imports and exports, exclusive of specie, were valued in paper milreis at 671,603,280 and 831,806,918 respectively. In the same year the value of the leading exports were as follows: Coffee, 509,190,115 milreis, paper; rubber, 149,691,325; tobacco, 23,971,821; hides, 13,427,229; cacao, 12,757,957. Notwithstanding the sparse population of the Amazon basin, the annual rubber export of the region is enormous, the reported amounts in 1897 and 1898 being 25,035,628 pounds and 22,220,332 pounds respectively, while in 1899 the export from the state of Amazonas was reported to amount to 25,647,666 pounds. In the last-named year this state also exported 4,464,934 pounds of cacao. On an average the Brazilian coffee export equals in value nearly 70 per cent. of the total importations. The production of yerba maté is important in southern Brazil, particularly in the state of Paraná, which in 1899 exported 49,097,977 pounds, of which amount Argentina took nearly two-thirds and Uruguay about one-third. On the basis of several preceding years this is the average maté export for Paraná. On account of extensive movements of the laboring population of Sao Paulo, the legislature of that state in 1900 enacted a law authorizing immigration companies to introduce into the state 50,000 Italian immigrants within a year. It is expected that these immigrants will be employed in the coffee fields. Statistics of Brazilian trade, which have been difficult to obtain except in fragmentary form, will probably become more available through a decree promulgated by the president on January 8, 1900, establishing a bureau of commercial statistics at the custom house in Rio de Janeiro. Trade reports of the United States and Great Britain show that the trade of Brazil with those countries has been as follows in fiscal years:

	Imports to Brazil.		Exports from Brazil.	
	1898.	1899.	1898.	1899.
United States.....	\$13,317,036	\$12,239,036	\$61,750,369	\$57,875,747
Great Britain.....	30,151,128	26,225,502	22,392,227	19,268,650

In 1900 the imports from the United States amounted to \$11,578,119, and the exports to the United States, \$58,073,457.

Communications.—A large part of Brazil is unsettled, and far in the interior vast tracts are still practically unexplored. Even in the partially settled regions good roads are almost non-existent, and communication accordingly is very difficult. In the less sparsely inhabited districts, however, railway construction has progressed to a considerable extent, so that, excepting Argentina, Brazil has a greater railway mileage than any other Latin-American country. The government does not insist

upon any uniform system for railway reports; but the following statements have been compiled from various reports of the railroad companies: "There are now [1900] in Brazil 63 separately operated lines of steam railways, aggregating 9197 miles under traffic. Of this total 908 miles are broad gauge, or 5 feet 3 inches; 7742 miles are 1 metre gauge, or 3.28 feet; and 551 miles are 0.75 metre, or 2.46 feet gauge. The government operates 5 lines having a total length of 1287 miles; the states own 4 lines of 110 miles; guaranteed companies operate 4587 miles, and non-guaranteed companies, 3213 miles. The union and the states have constructed 2131 miles." The railways are divided into separate systems, of which only two are connected, each terminating at a port. The Rio de Janeiro system, with a length of about 3700 miles, is the most important and traverses the state of Rio de Janeiro and the southern part of Minas Geraes. The Santos system in the state of Sao Paulo is over 2000 miles in length. From the reports mentioned above the following inferences were made: That from the point of view of income the lines managed by the government are the least profitable; that the expenses of the governmentally guaranteed lines do not usually exceed their incomes; that the governmental control and fiscalization resulting from the guaranteeing of railways has hampered the building up of new industries by the various managements; that, although passenger fares are low, the number of passengers in proportion to the size of the population and the length of the lines is small, though the proportion of second-class passengers is much larger than in the United States; that the building of railroads has been effected more by the initiative and aid of the government than by that of individuals. It is stated that all the railways, except those in the state of Sao Paulo, virtually receive some kind of government assistance. The approximate cost of the Brazilian railroads is \$571,000,000; the gross annual income about \$23,550,000; operating expenses, \$20,800,000, the net income therefore being \$2,750,000, or about one-half of 1 per cent. on the amount invested. The telegraph system, which is controlled by the government, comprised, in 1895, 10,143 miles of line.

Religion and Education.—There has been no state church since the establishment of the republic, and all forms of faith are tolerated, but the government continues to grant appropriations for the functionaries of the Roman Catholic Church. According to the census of 1890, 98.9 per cent. of the population was Roman Catholic. In the Roman Catholic system Brazil constitutes an ecclesiastical province, with a metropolitan archbishop at Bahia.

Over 80 per cent. of the inhabitants of Brazil are illiterates. Primary instruction, which is controlled by state and municipal authorities, is free but nowhere compulsory. Even approximately accurate data concerning it are not obtainable even by the federal government, but it is certainly in a very backward condition. Secondary education is largely private, but higher education is controlled by the central government. There are reported two law schools at Sao Paulo and Pernambuco, two medical schools at Rio de Janeiro and Bahia, four military schools, a naval school, a school of mines, a polytechnic, a lyceum of arts and trades, and eleven seminaries for the private instruction of the clergy.

German Colonization.—During 1900 there were repeated rumors that the new "world policy" of Germany was looking toward the development of German influence in Brazil, and possibly the establishment of some form of German administrative authority in the country. A report published in a prominent newspaper of Rio de Janeiro in the summer of 1900 stated that German colonization of parts of Brazil was being attempted, especially in the southern states of Parana, Santa Catharina, and Rio Grande do Sul. The report further stated that in Catharina there were purely German towns, where even the official documents were written in the German language, and it was intimated that the German home authorities had in mind an insurrection on the part of the colonists, whereby the German government might have "an excuse for intervention." According to a recent estimate, the total German population of Brazil was about 450,000. In Rio Grande do Sul, with a total population of 900,000, the Germans numbered 200,000; Santa Catharina, total population, 300,000, Germans, 100,000; Parana, total population, 280,000, Germans, 47,000; Sao Paulo, total population, 1,430,000, Germans, 25,000 to 30,000. It should be noted, however, that according to both German and British authorities, the German immigration to Brazil in 1898 was only 477.

The Guiana Boundary.—The disputed boundary between Brazil and French Guiana has been defined through the arbitration of the Swiss government. Settlement of the dispute had failed through the non-ratification by one government or the other of proposed treaties until August 15, 1897, when a treaty was concluded, submitting the question to arbitration. On December 6, 1899, the Swiss government was chosen as arbitrator, and on December 1, 1900, its decision was rendered at Berne. The French claim, including territory as far south as the Araguay River, which enters the Atlantic a little north of the Amazon delta, was almost wholly denied, the boundary fixed upon by the commission being the Oyapok River, which

also flows into the Atlantic, to its source in the Tumuc Humac Mountains, and thence the watershed of these mountains to the frontier of Dutch Guiana. This line represents very nearly the boundary of the territory that France has governed, no attempt having ever been made by her practically to extend her rule south of the Oyapok. The territory awarded to Brazil amounts to about 147,000 square miles and that to France about 300 square miles.

BRICKS. See CLAY.

BRIDGE. Sir JOHN, who in 1899 retired from the position of chief magistrate of London, died in that city April 27, 1900. He was born in 1824, was educated at Trinity College, Oxford, and was called to the bar in the Inner Temple in 1850. He was appointed to the London bench in 1872, and before him, especially while judge of the Bow Street court, were brought for trial many notable cases. He was knighted in 1890.

BRIDGE-BUILDING. The year 1900 was notable for the general activity of the bridge-building industry and for the number of important bridges upon which construction was begun or finished. In the United States the year began with various reports in regard to the intended consolidation of all the bridge-building and structural steel concerns into a single company, and on May 15 such a combination was actually accomplished by the incorporation in New Jersey of the American Bridge Company, with a capitalization of \$70,000,000, divided equally between common and preferred stock. This consolidation actually involved 24 formerly independent bridge-building concerns, with as many complete plants for turning out bridge and structural material. A few only of the large bridge-building concerns remained outside of the combination. In the commercial sense this consolidation ranks without doubt as the most important event, perhaps, of the year in the bridge-building industry. Another notable feature of the industry in the United States has been the increased activity in building bridges for export. As isolated instances of this activity may be noted the building of the Gokteik viaduct on the Burma Railway and the recent contract of the American Bridge Company for building 34 bridges on the Uganda Railway in Africa. These are but examples of similar work done elsewhere in foreign countries by American bridge-building firms.

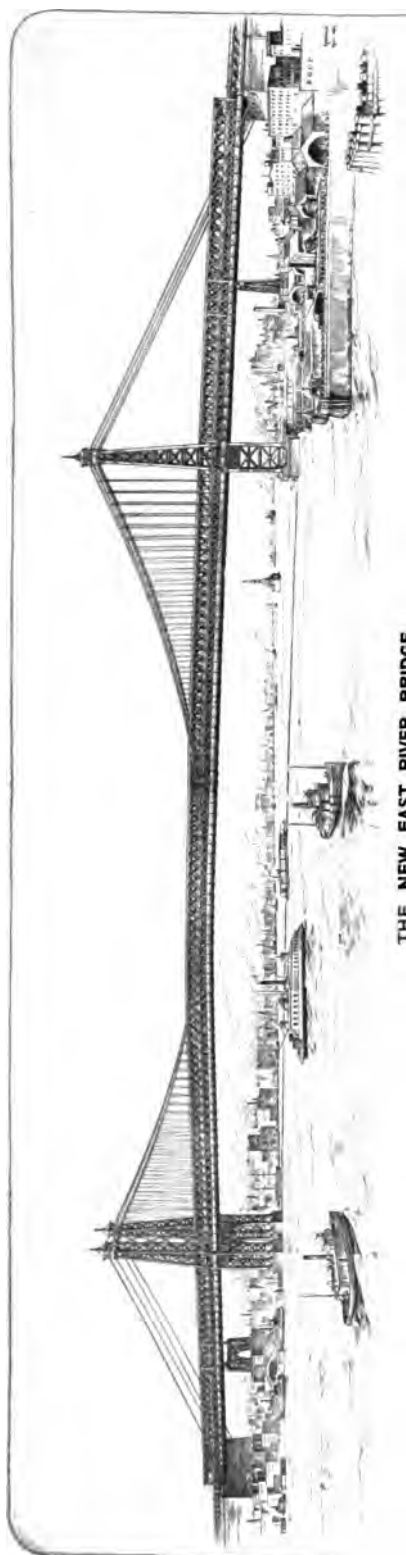
Turning now to specific instances of important bridge work carried out during 1900, we find quite an extensive and, in some respects, a remarkable list of such works. At New York City, work has been actively in progress on the new East River Bridge, which is to connect Brooklyn with Manhattan Island at a point about one and one-fourth miles north of the present Brooklyn Bridge. This bridge is to have a suspension span of 1600 feet, two shore spans of about 600 feet each, and a width of 118 feet, being intended to carry two elevated and four trolley railway tracks between the stiffening trusses, with a foot-walk and a bicycle track over the trolley tracks and carriage-ways on the cantilever floor beams extending outside of the trusses. The progress of the work up to January 1, 1901, has been about as follows: The tower foundations were finished about two years ago, and during 1900 the anchorages were completed so far as they can be until the suspension cables are made. The contract for the steel towers and end spans was awarded in February, 1898, and called for the construction and erection of nearly 12,000 tons of steel work, about equally divided between the towers and the end spans. The towers were finished and the cable saddles set ready for the making of the cables in December, 1900. The cable saddles, of which there are four on each tower, weigh about 35 tons apiece, and each rests on 40 rollers, 5 inches in diameter and 9 feet long, rolling on steel bed-plates weighing about 22 tons each. The anchorages contain about 1600 tons of steel each, in the shape of anchor bars for the cables and platform girders for the anchorage of these bars. The contract for building the cables has been let, and at the beginning of 1901 the contractors had commenced preparations for making the cables, the first work on which will consist in constructing four foot-bridges, one under each cable, to form a continuous platform on which the men can work in making the cables. Regarding the future progress of the work, it may be said that it is expected by the bridge engineers that the cables will be well advanced if not finished during 1901, and that the approaches, which involve the manufacture and erection of 17,000 tons of steel work, will be finished during 1902. The contract for the suspended structure of the main span will probably be let during 1901, and will call for about 8000 tons of steel-work. In conclusion, it is of interest to note that the total amount of steel-work of various sorts which will be required for the new East River Bridge will be approximately 47,000 tons. In building the Firth Bridge in Scotland, the largest bridge ever constructed, 73,440 tons of steel were used. On January 1, 1900, the movement to secure the construction of a third and fourth bridge across the East River at New York had reached the following condition: The construction of the two bridges had been approved by both branches of the New York Municipal Assembly, and \$1,000,000 had been appropriated for beginning con-

struction on one of the proposed structures. During 1900 but little was heard of either of these projects; borings were, however, made for the foundations of the suspension structure, for which the \$1,000,000 noted above was appropriated, and more or less work had been done in preparing the plans. Late in 1900, also, a bill appropriating \$1,000,000 for making the borings was passed, and plans for the cantilever structure were approved by the mayor. The two companies with schemes for bridging the North River with spans of 3100 feet have maintained their existence, but so far as can be ascertained are scarcely nearer the accomplishment of their projects than they were a year ago.

Next in importance to the New East River Bridge work has been the work done on the bridge projected to cross the St. Lawrence River, near Quebec, Canada. Work on this structure was formally inaugurated on October 2, 1900, the substructure having been begun on that date under a contract for its completion in October, 1902. This bridge will cross the St. Lawrence from a point just south of Chaudiere, on the south side of the river, to Cap Rouge, on the north side. The substructure will consist of two abutments and two river piers, and will involve the construction of some 50,000 cubic yards of masonry. The river piers are to be founded on pneumatic caissons 168 feet long, 50 feet wide, and 50 feet high. The bridge superstructure will be of the cantilever type, with two 500-foot shore spans and an 1800-foot main river span. The spans of the Forth Bridge in Scotland, at present the longest bridge spans in the world, are 1710 feet, or 90 feet shorter than the main span of the projected Quebec Bridge. About 40,000 tons of steel will be required for the Quebec Bridge, and this will be manufactured and erected by the Phoenix Bridge Company, of Phoenixville, Penn. The bridge will provide for a double track railway, a double track electric railway, and two carriage-ways. It is being built by the Quebec Bridge Company, and aid has been voted by the Canadian parliament to the extent of \$1,000,000; by the Quebec legislature to the extent of \$1,250,000, and by the city of Quebec to the extent of \$300,000. The total cost of the bridge is estimated to be \$4,000,000. Another rather important Canadian bridge on which work was in progress during 1900 was the cantilever structure across the Ottawa River at Ottawa, which has a total length of 1049¾ feet, and a centre span of 555 feet 9 inches.

An important line of work which the bridge engineer has been called upon to perform in recent years has been the strengthening of existing bridge structures to meet the demands of increased weights of locomotives and cars. During 1900, two notable works of this character were carried out in the United States. The first of these was the strengthening of the Niagara Cantilever Bridge of the Michigan Central Railway. This structure was erected in 1883, and together with the Cincinnati Viaduct and the St. Johns (New Brunswick) Bridge, served to demonstrate the practical advantages which the cantilever truss affords in the possibility of erection without the use of false work, which is the fact upon which its present extended use chiefly depends. The Niagara Cantilever Bridge as built had a centre span of 910 feet 2½ inches, with two trusses spaced 28 feet apart and carried on steel framework towers. The strengthening carried out during 1900 consisted in building a third truss midway between the original trusses and in adding new tower legs to the supporting towers to carry this third truss. The second piece of reconstruction referred to above was the rebuilding of the famous Kinzua Viaduct on the Erie Railroad. The original structure was 2052 feet long and 310 feet high, and consisted of braced girder spans carried on 20 towers spaced 99½ feet apart on centres. It was built in 1882, and like the Niagara Cantilever Bridge referred to above, had become too light for the heavy weights of modern locomotives and cars. The reconstruction work consisted in building an entirely new structure of the same general dimensions, but much heavier and stronger. Some notion of the greater solidity and strength of the new structure is obtained from the fact that it contains some 6,700,000 pounds of steel work as compared with 3,500,000 pounds in the original viaduct. The Niagara Cantilever and the Kinzua Viaduct are, however, simply notable examples of a class of bridge-work which is going on all over the United States, and which has been rendered necessary by the present enormous weights of locomotives and cars as compared with the railway rolling stock of ten or twenty years ago. While on the subject of bridge renewal, attention may well be called to the decision of the city of Chicago to replace as rapidly as practicable all of its numerous centre pier swing bridges crossing the Chicago and Calumet rivers with drawbridges of the bascule type. Work was begun on two of these structures during 1900.

Compared with steel bridges masonry arches cut an insignificant figure in the totals of bridge building, but the beauty and permanency of structures of masonry will always ensure their use for particular locations, and several noteworthy masonry arch bridges were built during 1900. In point of general dimensions the most notable of these bridges is the one designed to carry the double tracks of the Pennsylvania Railroad across the Susquehanna River, at Rockville, Penn. Briefly described, this bridge consists of 48 stone arch spans, each 70 feet long, making a



THE NEW EAST RIVER BRIDGE.

CITY OF NEW YORK
 ROBERT A. VAN SICK PARKER, ENGINEER.
 JOHN E. LANE, ARCHT. & BUILDER.

CONTRACTORS, BUREAU OF BRIDGES.
 JAMES B. HARRIS, ARCHT. & BUILDER.
 JOHN E. LANE, ARCHT. & BUILDER.

THE BRIDGE, FROM THE EAST RIVER, LOOKING EAST.
 FROM THE EAST RIVER, LOOKING WEST.
 FROM THE EAST RIVER, LOOKING SOUTH.
 FROM THE EAST RIVER, LOOKING NORTH.
 FROM THE EAST RIVER, LOOKING EAST, FROM THE EAST RIVER, LOOKING WEST, FROM THE EAST RIVER, LOOKING SOUTH, FROM THE EAST RIVER, LOOKING NORTH.

PLAN OF NEW BRIDGE OVER THE EAST RIVER, NEW YORK, NOW IN PROCESS OF CONSTRUCTION.

masonry structure 3820 feet long, including the aggregate widths of the piers. These arches have a rise of 20 feet, with a thickness of arch ring of 42 inches. All the exposed faces of this structure are of heavy cut stone masonry, but the backing is of Portland cement concrete. In point of length of span the two-span stone arch bridge built to carry the Fitchburg Railroad over the Connecticut River, at Bellow's Falls, Vt., heads the list of American structures of this type built during 1900. This bridge has two spans of 140 feet, with a rise of 20 feet, and is built of stone masonry throughout. In addition to these stone arches there have been a number of arches composed of concrete, with an embedded metal skeleton, constructed during the year in the United States. Most of these have been structures of comparatively short spans constructed for park roads and for highways. In some respects the most notable of these structures are the two concrete-steel bridges, built to connect the mainland with Green Island and Green Island with Goat Island, at a point just above the falls of Niagara. The structure from the mainland to Green Island is the larger of the two, and consists of a centre span of 110 feet and two side spans of 103½ feet each, the centre span having a rise of 11½ feet and the two side spans rises of 10 feet. The exterior of this bridge will consist of a facing of cut stone for appearance, but the structure proper is entirely of concrete, with an embedded skeleton of steel. As indicating the favor with which this comparatively new method of bridge construction is being received by engineers and the public, it is interesting to note that one of the competitive designs submitted for the proposed Memorial Bridge across the Potomac at Washington, D. C., called for steel concrete arches of 192 feet span. In Europe concrete-steel arch bridges are receiving even greater favor than they are in the United States, the influencing fact there being the same as in this country—namely, that a structure can be built of this combination of materials, which possesses much of the æsthetic quality of the stone arch and at the same time costs far less to construct.

In England and Continental Europe there was something of a dearth of bridge building of particular importance. A bridge over the Rhone, at Teil, in France, and another across the Moselle, at Trarbach-Traben, in Germany, each about 800 feet long, are perhaps the most noteworthy structures actually erected. Projects for reconstructing noteworthy existing bridges and for building important new bridges were quite plentiful both in England and on the continent during the year. In England the projected work of reconstruction includes the widening of the London Bridge, and the partial or total rebuilding of the Thames River bridges at Kew, Richmond, Vauxhall, and Lambeth. The Southeastern & Chatham Railway also put forward a project for bridging the arm of the sea between the mainland of Kent and the island of Sheppey. In Continental Europe the project to bridge the arm of the sea between Jutland in Denmark and the island of Fionie has received considerable attention. The project calls for a bridge structure proper of 2100 feet, with a main span of 984 feet, to cost \$4,500,000. In other foreign countries bridge work has been unusually active. The French are at work on an important structure crossing the River Tukolo, in the French Soudan, and the English have rebuilt the Tugela and Frere railway bridges in South Africa, which were destroyed by the Boers during the early part of the present war. In New South Wales bids were received during 1900 for building a bridge to cross Sydney Harbor. The width of the crossing is about 1800 feet, and it is proposed to cross this space with a single main span 180 feet high above the water. In India, the Godavari River Bridge at Rajahmundry, Madras Presidency, was completed and opened for traffic. This bridge consists of 56 spans of 156 feet each, and is the second longest bridge in India, being 8400 feet long. Another Indian bridge of large size, the Gorga River Bridge at Turtipur, is under construction. This bridge will consist of 18 spans of 200 feet each. In Russia considerable bridge work in the aggregate has been done on the Trans-Siberian Railway (see TRANS-SIBERIAN RAILWAY), but none of the structures built in 1900 was of large size.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, founded 1831, is composed of the following ten sections: A, mathematics and physics; B, chemistry; C, geology; D, zoology; E, geography; F, economic science and statistics; G, mechanics; H, anthropology; I, physiology, and K, botany. The 1900 meeting was held at Bradford, with an attendance of two thousand. The address of the president, Sir William Turner, F.R.S., dealt with the rise of the cell theory, which was emphasized as one of the brilliant discoveries of the nineteenth century. Several of the sections gave time also to a discussion of the century's achievements, especially the botanical and geological sections, and the sub-section astronomy. The principal paper of section A discussed the recent search for an atomic theory of ether independent of that of chemistry, and the theory of gases. In section C, Professor Scott, of Princeton, discussed the bearing of recent researches in Patagonia upon a former land connection between South America and Australasia. The relation of mosquitoes to malaria was discussed before section D by Major

Ronald Ross, whose researches practically solved in the affirmative the claim that the mosquito is the infecting agent in cases of malarial fever. The meeting in 1901 will be at Glasgow. Secretary, G. Griffith, M.A., Burlington House, Piccadilly. See ZOOLOGICAL SOCIETIES.

BRITISH CENTRAL AFRICA, a name applied to the territory bounded on the east by the lakes Nyassa and Shireva, on the south by the Zambesi River, and on the north by the Congo Free State. Its western boundary is only provisional and runs along the upper Zambesi, starting from the Katerna rapids. The whole territory, with the exception of the British Central Africa Protectorate (*q.v.*), is under the jurisdiction of the British South Africa Company, and its official name is Northern Rhodesia. It is very sparsely populated, its native population being estimated at 3,000,000.

BRITISH CENTRAL AFRICA PROTECTORATE is that part of British Central Africa (*q.v.*) which lies along the western and southern shores of Lake Nyassa, and was formerly known as Nyassaland. It has a total area of 42,217 miles and a population estimated at 845,000, including about 300 Europeans, mostly British subjects. The soil is fertile and fit for the cultivation of European grains, which have been introduced by the British. The main product is coffee, and coffee plantations are being established all along Lake Nyassa, and especially in the Shiré province. Rubber is also found in considerable quantities, and the export of that article during 1900 amounted to £10,000. Other articles of export are oil seeds, rhinoceros horns, hippopotamus teeth, and rice. The total exports for the fiscal year 1900 amounted to £79,349, and the imports, £158,034, besides £18,000 for the British Central Africa administration, and £7400 of specie, making a total of £183,434 against £113,883 in 1899. The surveys for a railway to connect Chiromo with Blantyre and Lake Nyassa have been completed. The telegraph line along the western shore of Lake Nyassa has been completed as far as Abercorn, at the southeastern end of Lake Tanganyika, from where it is intended to continue it toward the Nile. The British government has established a free port at Chinde, at the mouth of Zambesi, situated on Portuguese territory. The chief town of the protectorate is Blantyre, in the Shiré province, and has a population of about 6000 natives and about 100 Europeans. The headquarters of the administration are situated at Zomba. The protectorate is administered by a commissioner under the foreign office, and the cost of administration is covered partly by government grants and partly by local taxation.

BRITISH COLUMBIA, a province of the Dominion of Canada, with an area of 383,300 square miles, and a population of 98,173 in 1891, and now estimated at 150,000. Capital, Victoria, with a population estimated in 1900 at 27,000. At the head of the administration of the province are a lieutenant-governor and a responsible ministry. There is only one chamber (a legislative assembly), consisting of 38 members elected by manhood suffrage. The province sends 3 members to the Dominion Senate and 6 to the House of Commons.

Industries.—Mining is the principal industry of the province, and according to official returns for the fiscal year 1899, the total output of the mines for that year amounted to \$12,356,555 against \$10,906,861 in 1898. Perhaps the greatest advance has been made in the output of placer gold, a fact due to the addition of Altin's output and a plentiful supply of water from the hydraulic operations at Cariboo and Cossiar. The output of that metal has increased from \$643,346 in 1898 to \$1,344,900 in 1899, while the total value of the product of gold during 1899 was \$4,202,473 against \$2,844,563 in the preceding year. The output of silver has fallen off from \$2,375,841 in 1898 to \$1,663,708 in 1899, while that of copper has increased from \$874,781 in 1898 to \$1,351,453 in 1899. The total output of the metalliferous mines during the fiscal year 1899 amounted to \$8,096,504. The coal production amounted to \$3,882,396, against \$3,407,595 in 1898, and the aggregate value of coal, coke, and other materials was \$4,260,051. The mining laws of the province are very strict, especially in regard to coal mining. A license for coal mining for a term of one year can be obtained on payment of \$50 30 days after the application is handed in. The regulations of the coal mines forbid the employment of children under 12 years, women or girls of any age, and Chinese or Japanese in underground work. The laws regulating the mining of other minerals are more liberal, the charge for a certificate being only \$5 for an individual miner, \$50 for a joint-stock company with a capital not exceeding \$100,000, and \$100 for a company with more than \$100,000 capital. The official returns for the fisheries show a considerable decline in that industry during the calendar year 1898. The total value of the catch in 1898 was \$3,713,101, as compared with \$6,138,865 in the preceding year. This decrease is accounted for by the small pack of salmon on the Fraser River, which has fallen off from \$5,185,576 in 1897 to \$2,661,830 in 1898. The total value of fish exported in 1899 was \$2,740,100, and the total amount of capital invested in the fishery industry was estimated at



SUMMER AND WINTER TRACKS ON THE CANADIAN PACIFIC, IN THE ROCKY MOUNTAINS OF BRITISH COLUMBIA.—The open track, on the left, for summer travel; that on the right, covered with a snow shed, for use in winter.

\$2,706,240. The revenue received by the government from the fisheries during the fiscal year 1899 amounted to \$45,802, the largest amount received from any province.

Commerce and Banks.—The official returns for the fiscal year 1899 give the value of imports at \$8,687,221, a slight decrease from the preceding year. Of the total amount, \$5,064,656 came from United States, and \$1,969,717 from Great Britain. The duty collected on imports amounted to \$2,111,322. Exports, domestic and foreign, have fallen off from \$16,919,717 in 1898 to \$14,749,032 in 1899. The number of commercial failures increased from 65 in 1899 to 115 in 1900, with \$975,368 liabilities and \$897,080 assets. The registered merchant marine of the province comprised 314 steamers and 174 sailing vessels, with a total net tonnage of 44,415. The number of chartered banks and bank branches has increased from 39 in 1898 to 47 in 1899. There were also 41 post-office savings-banks, with 3327 depositors and deposits amounting to \$907,253, while the only government savings-bank of the province had 3473 depositors and \$1,135,680 deposits. The clearings in the newly established clearing-houses at Victoria and Vancouver amounted during the fiscal year 1899 to \$75,686,042.

Railways, Telegraphs and Post-offices.—The total length of railway lines at the end of the fiscal year 1899 was 1129 miles, the smallest provincial mileage in the Dominion, as compared with the area of the province. The subsidies paid by the province and municipalities during the year amounted to \$75,000. The government telegraph lines had a total length of 567 miles, 394½ of which were operated by the Canadian Pacific Railway Company, the government making good the losses incurred in their operation. The number of post-offices has increased from 311 in 1898 to 343 in 1899, and the number of letters posted from 6,700,000 to 7,650,000. The 88 money-order offices issued during the year 97,762 orders, representing a sum of \$1,663,144.

Education.—The school system of British Columbia differs from that of any other province in the Dominion in being free, undenominational, and entirely supported by the government. At the head of the system is the superintendent of education, while the immediate control of the schools is in the hands of local trustees, elected by the rate-payers of each district. The returns for the fiscal year give the number of elementary schools at 244, with an enrolment of 7430 and an average daily attendance of 4280. The graded schools numbered 32, with an enrolment of 11,265 and an average daily attendance of 7722. The 4 high schools had a teaching staff of 12 teachers and assistants, and 490 registered pupils. The number of schools for Indian children was 38, with an enrolment of 1507 and an average attendance of 1034. The amount expended on education in 1899 was \$336,016, against \$290,225 in the previous year.

Finances.—The total revenue received during the year ending September 30, 1899, amounted to \$1,531,639. The main sources of revenue were: Dominion subsidies, \$242,689; general mining receipts, \$186,703; "free miners' " certificates, \$155,104; real property tax, \$119,878, and personal property tax, \$114,901. The expenditures for the same year amounted to \$2,156,474. The principal items of expenditure were: public roads, bridges, etc., \$601,108; education, \$268,653; public works and buildings, \$252,138, and justice, \$271,412. The gross debt of the province at the end of the fiscal year 1899 was \$8,243,083. The total value of assets, excluding public buildings, was \$2,762,835, leaving a net debt of \$5,480,248, or \$31.70 per head, the highest debt per head in the whole Dominion.

History for 1900.—Early in February a decision was reached by the provincial government providing for the abolition of the discriminations against aliens in the mining industries. The Semlin ministry was defeated by a vote of 19 to 18, and Mr. James Martin was called upon to form a new ministry. The avowed policy of the new premier was government ownership of railways, introduction of an eight-hour day, construction of new railroads to the mining districts, and the exclusion of Mongolian labor. The latter measure was subsequently opposed by the federal government, on the ground that the provincial government cannot consistently tax the Mongolians and at the same time exclude them from any chance of earning a livelihood. As a result of the general elections in the province on July 9, the Martin ministry was defeated and a new cabinet was formed under the premiership of Mr. James Dunsmuir.

BRITISH GUIANA, a colony of Great Britain on the northeastern coast of South America, comprising the settlements of Demerara, Essequibo, and Berbice, has an area of about 109,000 square miles, including the territory formerly claimed by Venezuela, but awarded to the colony in October, 1899, by the Paris arbitration commission. In 1898 the population was estimated at 286,484, nearly one-half of whom were engaged in agriculture; about one-third of the inhabitants are negroes, and another third East Indians. The capital is Georgetown, population about 53,200. The next largest town is New Amsterdam; population about 8900. The colony is administered by a governor, Sir Walter J. Sendall, since 1898, who is assisted by a

court of policy of 7 official and 8 elective members, and a combined court comprising the court of policy and 6 elective financial members. In the fiscal year 1899, 208 schools, having about 28,700 pupils, received a government grant amounting to \$104,376. The chief item of revenue is customs duties; other receipts are derived from licenses, the rum duty, and the royalty on gold. The leading expenditures are for administration, church, judiciary, education, and public works. The public debt in 1899-1900 was £928,775. Other statistics of finance and statistics of commerce for fiscal years are:

	Revenue.	Expenditure.	Imports.	Exports.
1898	£505,369	£562,598	£1,282,976	£1,783,764
1899	525,865	525,387	1,371,412	1,775,691
1900	538,838	525,542	1,318,701	1,788,987

In 1899 more than half of the imports came from Great Britain and about a quarter from the United States; trade is increasing with the latter country, which received about half the exports, Great Britain taking most of the remainder. The total entrances and clearances at the ports in the year 1898-99 aggregated 632,090 tons. Although but little more than a fringe of land along the coast and the rivers is under cultivation, the people seem to be giving more attention to agriculture than formerly. Of the cultivated land about seven-eighths is planted to sugar, the principal export of the colony. The sugar industry, however, has been damaged by the bounties paid to European beet-growers. Other important exports are rum, balata, molasses, and gold. The values of the principal exports in the fiscal year 1900 were as follows: Sugar, £1,101,254; gold, £416,630 (113,367 ounces); rum, £208,397; molasses, £20,092; timber, £11,234. The leading imports are textiles, flour, rice, machinery, manures, fish, coal, and hardware. The colony lacks laborers for the proper development of its resources. British Guiana has valuable gold deposits, but gold mining has declined somewhat, as the larger and richer claims seem to be exhausted, while new ones have not yet been opened up. The amount produced in the fiscal year 1898 was 125,080 ounces, valued when exported at \$2,220,977; in 1899, 112,464 ounces, valued at \$2,016,699. Diamonds have been found in what is regarded as paying quantities, especially in the Upper Mazzaruni, a tributary of the Essequibo River. British Guiana has good roads, and in this respect is decidedly unlike the Latin-American republics, excepting Salvador; the roads, together with 450 miles of navigable rivers and 40 miles of railway, make transportation fairly easy. There are 74 post-offices and about 560 miles of telegraph lines.

BRITISH HONDURAS, or BELIZE, a crown colony of Great Britain, lying east of Guatemala, on the Caribbean Sea, and touching the Mexican state of Yucatan on the north, has an area of 7562 square miles, and an estimated population (1897) of 34,747, of whom only about 500 are whites. The capital is Belize, which has about 7000 inhabitants. The colony is administered by a governor (Sir David Wilson since 1897), who is assisted by an executive council of 3 official and 2 unofficial members, and a legislative council of 3 official and 5 unofficial members. There are 49 schools in the colony, of which all but 1 are denominational and in receipt of government assistance. Public revenue is derived mainly from customs duties. Gold and other metals occur, but have not been developed. The staple products are the natural woods of the colony, chiefly mahogany and logwood. There are a number of sugar and coffee plantations and various fruits are cultivated. In all about 15,000 acres are under tillage. Since 1894 the United States gold dollar has been the standard of value. Besides subsidiary silver, amounting to about \$200,000, there are in circulation nearly \$120,000 in government notes. Other statistics of finance and statistics of commerce for fiscal years are as follows:

	Public Debt.	Revenue.	Expenditure.	Imports.	Exports.
1898	\$168,815	\$274,690	\$301,413	\$1,248,910	\$1,282,593
1899	168,815	250,458	262,413	1,031,473	1,278,617

Great Britain sends over one-third of the imports and receives over two-thirds of the exports. In the fiscal year 1899 the trade with the United States was: Imports (from the United States), \$500,802; 1900, \$620,447; exports (to the United States), 1899, \$198,203; 1900, \$198,040. Besides the principal products, mahogany and logwood, the exports include fruit, sugar, rubber, coffee, and sarsaparilla.

An advance of 20 per cent. on breadstuff duties so enraged the populace that in July, 1900, serious riots occurred at Belize, culminating in an attack upon the governor, Sir David Wilson, C.M.G., who escaped to Vera Cruz on the Mexican cruiser *Zaragosa*.

BRITISH MUSEUM, founded in 1753, and opened to the public in 1759, in Bloomsbury, London, consists of the following departments: Manuscripts, printed

books, prints and drawings, zoology, botany, mineralogy, and antiquities. The last-named department is subdivided into the departments of Greek and Roman antiquities, coins and medals, and Egyptian and Assyrian antiquities; there are also separate departments for British and mediæval antiquities, and for oriental printed books and manuscripts. The manuscript department contains upward of 55,000 volumes, besides papyri, charters, etc. The printed book department contains about 2,000,000 volumes, and its annual increase is about 46,000 volumes, not including continuations, music, and newspapers. The department receives a copy of every book published in the United Kingdom. This library has the largest and best collection of English literature in the world, and the best collection in each European language that exists outside the country in which that language is spoken. In 1899 the library received newspapers, published in the United Kingdom, to the number of 3483, of which 1271 were published in London and its suburbs. The number of visitors in 1899 was 663,724, against 612,275 in 1898; there were 188,554 visitors to the reading-room, against 190,886 in the preceding year. The number of volumes supplied to readers was 1,306,078 in 1899, and 1,397,145 in 1898.

The great printed catalogue of the library, begun in 1880, was nearing completion at the close of 1900. The new catalogue, the preparation of which has cost some £40,000, is divided into 386 departments, published in over 800 volumes. The work of compilation has been done by the officials and employees of the library, under the supervision of a committee of specialists for each department. The 386 parts of the catalogue may be bought separately, the price of the entire work, together with 100 supplementary volumes, being £64. Some idea of the immense number of titles in the work is suggested by the statement that there are 40,000 titles of polemical literature alone on the French Revolution. The new catalogue is regarded as the best work of its kind ever produced. The previous catalogue was written, and comprised over 2000 volumes.

BRITISH NORTH BORNEO. See BORNEO.

BROMOCOLL. A sedative and hypnotic, tested during 1900 as a substitute for the alkaline bromides, is termed bromocoll. It is made by the precipitation of tannin-bromide solutions with gelatin solutions. It contains 20 per cent. of bromine in organic combination, and forms a yellowish, tasteless and odorless powder. It is almost insoluble in water. It is also used as a cicatrisant for ulcers and other wounds, and to allay itching.

BROOKLYN INSTITUTE OF ARTS AND SCIENCES, organized in 1824, had in 1900 a membership of 6391, but the 26 different departments show for the academic year 1898-99 a membership of 1062. There is a library of 27,000 volumes. During 1899, 9 courses of general lectures were given, besides 592 lectures in the regular departments, and 11 exhibitions were given. The Institute has the museum building partly built, a building in Bedford Park, the art building on Montague Street and a biological laboratory at Cold Spring, L. I. The year's income was \$147,096.65. Its school of pedagogy has 14 classes and an enrolment of 464 students, and a gift of \$60,000 was received for the purchase of the Tissot collection of paintings illustrating the life of Christ. The total attendance at lectures, concerts, and other exercises was 530,151. President of Board of Trustees, A. Augustus Healy; secretary, George C. Brackett, Brooklyn; Franklin W. Hooper, M.A., director.

BROSÖLL, JOHAN CARL CHRISTIAN, Danish novelist (pseudonym CARIT ETLAR), died May 9, 1900. He was born at Fredericia, August 7, 1816, and after studying for a time at the Academy of Painting at Copenhagen, he was compelled by poverty to withdraw, and he then applied himself to literary work as a means of support. In 1844 he entered the university, where two years later he won the gold medal for excellence in literary composition. Among his principal works are: *Smuglerens Søn* (The Smuggler's Son, 1839); *Gjenghøvdingen* (1853); *Vaabeumesteren* (The Armorer, 1856); *Hervert's Kronike* (Hervert's Chronicle, 1863); and *Salomon Baadmand* (Solomon the Boatswain, 1880). Collected editions were published of *Skrifter* (24 vols., 1859-68); *Skrifter Ny Samling* (5 vols., 1873-79); and another edition (1888). In addition to his other works, Brosöböll essayed the production of plays, but his excellence lies in his historical and romantic novels and tales, of which the most noteworthy characteristics are a wonderfully keen imagination, skill in outlining characters, and most particularly, a thoroughly convincing portrayal of Jutland peasant life.

BROTHERHOOD OF ANDREW AND PHILIP was founded in Reading, Penn., 1888, for "the spread of Christ's kingdom among young men" by prayer and service, and held its first federal convention in New York in 1893. It is found in twenty-two evangelical denominations: The Northern, Southern, Canadian, Cumberland, and United Presbyterian denominations, the Reformed Church in America, the Reformed Church in the United States, and the Congregational, Methodist Episcopal, Methodist Protestant, African M. E., Baptist, Free Baptist, United Brethren,

Progressive Brethren, Lutheran, Church of Christ, Friends, Evangelical Association, United Evangelical, Church of Japan, and Reformed Episcopal churches. There were at the close of 1900, 570 chapters, with a membership of 15,500. *The Brotherhood Star*, the organ of the society, is published monthly in New York City. The president of the federal council is the Rev. Rufus W. Miller, Reading, Penn., also its founder; secretary and treasurer, the Rev. C. E. Wyckoff, Irvington, N. J. Some chapters are the result of a union effort and are listed as federal rather than under any denomination. The most successful of these is the Christian Seamen's chapter, organized by the Rev E. C. Charlton, of Gloucester, Mass. This Seamen's Brotherhood aims to unite all missions among seamen under the brotherhood rules. A flag has been adopted which flies every Sabbath day to show where the seamen on any vessel observe the Sabbath. A mission vessel has been equipped for the fishermen along the Atlantic coast. It dispenses medical stores.

BROWN, Rev. JOHN WESLEY, the rector of St. Thomas's Church, New York City, died November 10, 1900. He was born at Baltimore, Md., in 1837, graduated from Dickinson College, Carlisle, Penn., and was five years a Methodist preacher before entering the Episcopal Church. He exerted a strong influence in his rich parish.

BROWN UNIVERSITY, Providence, R. I., founded 1764. The first annual report of President W. H. P. Faunce deals largely with a discussion of the educational problems which are occupying the attention of American universities, and lays emphasis on the resolve that Brown shall give its main strength to academic work. In discussing the relation of Brown to the secondary schools, the president, while approving of the system of admitting students by certificate from accredited schools, points out some sources of weakness in the present methods. Hereafter at Brown each school will receive the privilege of certification for a period of from one to five years, according to the age and standing of the school, at the end of which time the school must again submit a statement of its curriculum, teaching force, equipment, etc. Each school will receive an annual report of the progress or the failure of its graduates with suggestions as to the cause. In addition, the English department is calling for an entrance examination in English for all, since certification in that subject, the president reports, has been almost always unsatisfactory. Some combination of the two systems is his remedy for certain unfavorable results. His report on the elective system concludes that most students do not deliberately select courses which are supposed to be easy, but that through lack of proper knowledge and counsel they often select them without reference to a proper grouping, or with too strong a tendency toward early specialization. He calls not for less freedom, but for freedom guided by intelligence and ripe experience, and concludes that "because the old traditional curriculum was of cast iron it does not follow that the new one should be a rope of sand." The question as to whether both Latin and Greek shall continue to be required for entrance to the arts course was under debate during the year by the faculty of Brown, and it was expected that a definite conclusion would be reached early in the new year. In reference to the omission of Greek as a requirement, the president reports a nearly even division of opinion at the present time among the leading American universities. One of the most interesting points discussed in relation to the work of the year at Brown is the place which biblical studies are coming to occupy in modern education. During the year from 350 to 400 students representing all shades of religious opinion, elected work in the department of biblical literature. Judging from the statistics of some of the leading universities, it is the opinion of the president that the day is not far distant when the men who are graduated from our colleges entirely ignorant of biblical history and literature will be the exception.

The great event of the year in a material way was the success of the movement to raise an endowment fund of \$1,000,000 for the university. Several new buildings or building improvements were under way during the year. Memorial gates and an administration building were provided for by the bequest of Augustus S. Van Wickle, '76, and a site at the top of College Hill was selected for these structures. A new president's house in process of building was expected to be ready for occupancy in the spring of 1901. The gift of Mrs. Horatio N. Slater of the family mansion as a dormitory for the women's college was accepted, and the building was being renovated and was receiving an additional story. Maxcy Hall, destroyed by fire late in the year, was being rebuilt, and plans were concluded for an additional story to be built on the structure devoted to technical laboratories. The development of the Metcalf estate, presented to the university as a botanical garden, was begun during the year. Many of the most remarkable trees in the State are already growing there, and a nursery for trees will soon be ready. A portion of the estate will in time be laid out for experiments with aquatic plants and animals. One of the most important changes in the internal administration of the university was the establishment of the office of dean and the appointment thereto of Professor Winslow Upton. Mr. Louis F. Snow, the dean of the women's

college, was succeeded at the close of the college year by Miss Annie Crosby Emery, Bryn Mawr, '92, since 1897 dean of women in the University of Wisconsin. The greatest material need of Brown is a new library building and an endowment for annual purchases. Of the 5438 books added during the year, all but 1168 were gifts. The total collection is now 110,000 volumes and 30,000 pamphlets. The faculty numbers 77 and the student body 872, of whom 94 were graduate students and 154 in the women's college. See *PSYCHOLOGY, EXPERIMENTAL*; and *UNIVERSITIES AND COLLEGES*.

BRUOE, Miss CATHARINE WOLFE, a most generous patron of astronomical science, died March 13, 1900, at the age of 84. She has made gifts to the Harvard and Columbia observatories and donated to the Astronomical Society of the Pacific the fund which is devoted to the annual presentation of a gold medal to some astronomer for distinguished service to the science. This was awarded during the last year to Sir David Gill (*q.v.*), of the Cape of Good Hope Observatory. One of her most recent gifts was the new telescope for the Helsingfors Observatory in Russia, where a series of trail photographs are to be taken for measurement at the Columbia University Observatory. See *ASTRONOMICAL PROGRESS*.

BRUNEL. See *BORNEO*.

BRYAN, WILLIAM JENNINGS, candidate of the Democratic party in 1896 and in 1900 for President of the United States (see *PRESIDENTIAL CAMPAIGN*), was born in Salem, Ill., March 19, 1860. His father, Silas L. Bryan, was a well-known lawyer, for eight years in the Illinois Senate and later a circuit judge. The son graduated at the Illinois College (Jacksonville) in 1881 and at the Union College of Law (Chicago) in 1883. He then began the practice of law in Jacksonville. In 1884 he married Mary E. Baird, of Perry, Ill. In 1887 he removed to Lincoln, Neb., where he has since made his home. In 1889 Mr. Bryan was offered, but declined, the State Democratic nomination for lieutenant-governor. In 1890 he was elected to Congress from a Republican district and was re-elected in 1892. He was placed upon the Committee of Ways and Means, and became widely known as an eloquent advocate of the coinage of free silver. In 1894 he ran for a United States senatorship, but was defeated by the Republican candidate, John M. Thurston. From 1894 to 1896 he was editor of the *Omaha World-Herald*. At the Democratic National Convention held in Chicago in the summer of 1896, Mr. Bryan, by an impassioned speech, routed the gold-standard advocates, led by Senator David B. Hill, and gained for himself a spectacular triumph and the presidential nomination. His apostrophe to those who desired the maintenance of the gold standard has been quoted with denunciation or approval from that time to this: "You shall not," said Mr. Bryan, "press down upon the brow of labor this crown of thorns! You shall not crucify mankind upon a cross of Gold!" During the campaign Mr. Bryan travelled over eighteen thousand miles, placing the currency issue before the people with a boldness and reiteration which stung the whole country to intense excitement. In the election Mr. Bryan received 176 electoral votes and William McKinley (*q.v.*) 271. It was then said, both by Republicans and by Gold Democrats, that "Bryan and his cause were dead." Mr. Bryan, however, continued active in public affairs. In 1898 he raised and commanded a regiment of Nebraska volunteers, and in 1899 he successfully exerted his influence with Democratic senators to secure the ratification by the Senate of the treaty with Spain. Before the Democratic convention met in July, 1900, it had become a foregone conclusion that Mr. Bryan would again be nominated. But it was not anticipated that his prestige would be great enough to enable him virtually to dictate the party platform. Having insisted, however, that silver coinage should again be made a leading issue, Mr. Bryan, during his campaign speeches, gave the greater part of his attention to the questions of imperialism and the trusts. In the election Mr. Bryan received 155 electoral votes as against 292 cast for President McKinley. Mr. Bryan then announced that he would publish a weekly paper, to be called the *Commoner*, in the interest of the common people, and that through this medium he would continue to discuss public questions of the day. In an article in the *North American Review*, Mr. Bryan, in commenting upon the election, said that so far as issues are concerned "an election is not necessarily conclusive upon any subject," and that "the Republican victory was due to money, war, and better times." A full discussion of Mr. Bryan's utterances upon the issues and results of the *PRESIDENTIAL CAMPAIGN* will be found under the various sub-titles of that article.

BRYN MAWR COLLEGE, at Bryn Mawr, Penn., near Philadelphia, a leading woman's college, opened in 1885. At the opening of the college year 1900-01 it had a faculty of 40 and a student body of 383. The library contains 33,212 volumes and 8000 pamphlets, including the classical library of the late Professor Saupe. Besides its college course leading to the A.B. degree, there is an excellent graduate department, which confers the degrees M.A. and Ph.D. Gifts aggregating \$22,000 were

received during the year. The amount of productive funds is \$1,000,000. See UNIVERSITIES AND COLLEGES.

HUBONIC PLAGUE. See PLAGUE.

BUCHHEIM, CHARLES ADOLPHUS, Ph.D., professor of the German language and literature at King's College, London, died on June 14, 1900, at the age of 72. Born in Moravia, he was educated at the University of Vienna, and after 1852 lived in London. In 1863 he became professor in King's College; he was also at various times examiner in German to the universities of London, Oxford, Cambridge and other institutions, and was at one time German tutor to the children of the Prince of Wales. He translated several of Dickens's novels into German and published, through the Clarendon Press, annotated editions of a large number of the German classics. In the *Golden Treasury Series* he published the popular *Deutsche Lyrik* (1875); *Baldaden und Romanzen* (1891), and Heine's *Lieder und Gedichte* (1897). With the Rev. Dr. Wace he published the *First Principles of the Reformation* (1883).

BUCKWHEAT. The following table, published by the Department of Agriculture, division of statistics, shows the acreage, production, and value of buckwheat in the United States in 1900:

STATES AND TERRITORIES.	BUCKWHEAT.				
	Acreage.	Yield per acre.	Production.	Value per bushel.	Total value.
	<i>Acres.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Cents.</i>	<i>Dollars.</i>
Maine.....	23,993	30	719,760	49	353,682
New Hampshire.....	2,799	22	61,578	52	32,021
Vermont.....	9,535	25	238,375	50	119,188
Massachusetts.....	2,187	17	37,179	72	26,769
Rhode Island.....	.....	.....	.....	.....	.....
Connecticut.....	3,760	16	60,304	65	39,198
New York.....	234,297	14	3,280,158	57	1,869,690
New Jersey.....	10,005	16	160,080	59	94,447
Pennsylvania.....	227,743	14	3,188,403	55	1,753,621
Delaware.....	243	13	3,159	52	1,643
Maryland.....	7,435	15	111,525	57	63,569
Virginia.....	4,524	13	58,812	55	32,347
North Carolina.....	1,601	13	20,813	56	11,655
South Carolina.....	.....	.....	.....	.....	.....
Georgia.....	.....	.....	.....	.....	.....
Alabama.....	.....	.....	.....	.....	.....
Texas.....	.....	.....	.....	.....	.....
Arkansas.....	.....	.....	.....	.....	.....
Tennessee.....	965	14	13,370	59	7,898
West Virginia.....	13,174	17	223,956	56	125,416
Kentucky.....	.....	.....	.....	.....	.....
Ohio.....	9,227	16	147,632	58	85,627
Michigan.....	22,160	14	310,340	51	158,223
Indiana.....	5,011	14	70,154	61	42,794
Illinois.....	4,476	15	67,140	65	43,641
Wisconsin.....	27,533	14	385,462	59	227,423
Minnesota.....	9,564	15	143,460	57	81,773
Iowa.....	9,920	15	148,800	64	95,233
Missouri.....	2,399	13	31,187	69	21,519
Kansas.....	.....	.....	.....	.....	.....
Nebraska.....	5,155	16	82,480	64	52,787
South Dakota.....	.....	.....	.....	.....	.....
North Dakota.....	.....	.....	.....	.....	.....
Montana.....	.....	.....	.....	.....	.....
Colorado.....	.....	.....	.....	.....	.....
New Mexico.....	.....	.....	.....	.....	.....
Utah.....	.....	.....	.....	.....	.....
Idaho.....	.....	.....	.....	.....	.....
Washington.....	.....	.....	.....	.....	.....
Oregon.....	226	13	2,988	77	2,292
California.....	.....	.....	.....	.....	.....
United States.....	637,980	15.0	9,566,966	55.8	5,341,413

BUENOS AYRES. See ARGENTINA.

BUILDING STONE. In 1899 the value of the building stone quarried in the United States was \$44,736,576, as compared with \$36,607,264 in 1898. For the same periods the *Mineral Industry* gives the following figures:

	1899.	1898.		1899.	1898.
Granite.....	\$10,200,000	\$9,500,000	Marble.....	\$4,200,000	\$4,000,000
Limestone for building.....	14,600,000	14,000,000	Bluestone.....	1,000,000	800,000
			Sandstone.....	5,600,000	4,800,000

Nearly one-half of the granite used in the United States is quarried in Massachusetts. Sixty per cent. of the output is used in the construction of buildings, bridges, walls, etc.; 25 per cent. in the construction and maintenance of highways, while the remainder is used largely for monuments and cemeteries. Limestone for building is produced largely in Indiana, and is being used extensively. During 1899, Arizona and Colorado commenced the quarrying of marble on a large scale, and every year new quarries for different kinds of building stones are being opened in the West. Vermont continues to produce the greater part of the marble quarried in the United States, and from 55 to 75 per cent. of the total production is used for monuments or tombstones.

BULGARIA, a tributary state of Turkey, lying south of the Danube, has been an autonomous principality since the signing of the treaty of Berlin in 1878. The estimated area of Bulgaria proper is 24,380 square miles, and of eastern Roumelia, which in 1885 was incorporated with it under the name of South Bulgaria, 13,700 square miles. The population of the entire principality, which, according to the census of 1893, was 3,310,713, has been more recently estimated at 3,376,467. Besides Bulgarians, the following races are numerous: Turks, Roumanians, Greeks, Gypsies, Spanish-speaking Jews, and Tartars. The capital, Sofia, has about 47,000 inhabitants; the populations of other important towns are: Philippopolis, 41,000; Rustchuk, 37,000; Varna, 28,000; Tirnovo and Gornia Oréhovitsa, each 25,000.

The national religion is the Orthodox Greek, though since 1870 the Bulgarian Church has not been included in the Orthodox communion. The government of the church is vested in a synod of bishops. Of the inhabitants, upward of 2,600,000 are Orthodox Greeks, 640,000 Mohammedans, 28,000 Jews, and 22,000 Roman Catholics. For the clergy of the various faiths appropriations are made by the state. Elementary instruction, which is provided for by the state and by the municipalities, is free and nominally compulsory for children between 8 and 12 years of age. In 1898 there were 4686 elementary schools, with 7965 teachers and about 348,700 pupils. There are also a number of higher schools, and at Sofia a university, which in 1898 had about 40 instructors and 350 students.

Government and Finance.—The executive authority is vested in a prince (Ferdinand I., son of the Prince Augustus of Saxe-Coburg and Gotha, since August, 1887), who is assisted by a cabinet of eight ministers, nominated by himself and directing the departments of foreign affairs and public worship, finance, the interior, public instruction, war, justice, commerce and agriculture, and public works and communications. The constitution places the legislative power with the Sobranje, a single chamber, the members of which are elected by popular vote in the ratio of one representative to each twenty thousand inhabitants. Enactments of the Sobranje require the assent of the prince, who may dissolve the chamber at pleasure, but must order new elections within four months. Questions of territorial acquisition or cession, constitutional changes, or succession to the throne must be acted upon by a special assembly called the Grand Sobranje, elected, as occasion demands, in a manner similar to that employed for the regular Sobranje. The estimated strength of the army on a war footing is 209,000 men. The navy consists of only a few small vessels.

The principal source of revenue is taxation, direct and indirect; expenditure is chiefly for interest on the public debt and for the departments of war, the interior, public instruction, and public works. In 1899 measures were taken to convert the entire national debt into a new 5-per-cent. loan of 260,000,000 leva. The lev has the same value as the franc, 19.3 cents. The budget estimates of revenue and expenditure have been as follows:

	1897.	1898.	1899.
Revenue.....	83,425,019 leva	84,445,713 leva	84,097,195 leva
Expenditure.....	83,422,659 "	84,487,975 "	84,035,514 "

In the revenue for 1899 direct taxes comprised 33,941,000 leva, and indirect taxes 31,951,000 leva; while of the expenditure, service of the public debt represented 20,931,000 leva, and war expenses 22,623,000 leva.

Industries and Commerce.—Theoretically, the land is owned by the state; landholders have hereditary lease and pay one-tenth of the produce to the government. About 70 per cent. of the inhabitants are engaged in agriculture. Of the total area of the country nearly one-half is pasture, about one-fourth arable land, and something over one-sixth forest and heath. Wheat, which is largely exported, is the principal product; wine, silk, and attar of roses are also produced. Manufactures include various textiles, tobacco goods, and alcoholic liquors. Iron, coal, gold, silver, manganese, and copper are found. Besides wheat, the exports include live stock, woollens, skins, cheese, attar of roses, cocoons, tobacco, and timber; and the

principal imports are textiles, hardware, machinery, fish, coal, salt, and paper. The value of imports and exports has been:

	1896.	1897.	1898.
Imports.....	\$14,770,344	\$16,210,898	\$14,036,938
Exports.....	20,986,816	11,539,569	12,841,642

In the order of their importance the principal countries importing to Bulgaria are Austria-Hungary, Great Britain, Germany, Turkey, France, Belgium, and Russia.

Communications.—In Bulgaria proper and eastern Roumelia there were in 1899 835 miles of railway in operation and 130 miles under construction. In the previous year the state telegraph lines aggregated 3250 miles in length, the state telephone lines 915 miles, and the post and telegraph offices numbered 1955. The government system of posts and telegraphs is not self-supporting, the receipts in 1898 being about 2,921,000 leva and the expenses about 3,127,000 leva.

Relations with Russia and Servia.—During the spring of 1900 there were persistent rumors that through Russian influence Prince Ferdinand was on the point of assuming a royal title and claiming for Bulgaria an independence equal to that of Servia. Later it was alleged that Russia and Bulgaria had entered into a secret treaty, whereby the latter should be recognized as an independent kingdom, the former should be allowed to use the Bulgarian port of Burgas as a naval station, Bulgarian (and Montenegrin) forces should act with Russia in case of war, and Macedonia should be partitioned between Bulgaria and Montenegro. It is not improbable that the clause concerning the naval station was agreed upon; but, though Russia, doubtless, would be pleased to see the realization of the others, she was in no mood for assuming unnecessary risks during 1900, when her energies were so largely taken up in the Far East. Such action on the part of Russia, moreover, would be in direct violation of the treaty of Berlin, and would necessarily occasion serious trouble not only with Turkey, the suzerain power of Bulgaria, but with Austria, jealous for the *status quo* of the Balkan countries and deprecating any increase of Russian influence there. It was suggested that Russia's attitude in encouraging the ambitions of Bulgaria was not so much an assurance of real assistance to the principality as it was a ruse for frightening the Sultan into granting her own demands in Asia Minor.

Also in the spring of 1900 bitter feelings between Servia and Bulgaria, aroused in part by defamatory publications in the latter country concerning ex-King Milan, culminated in the mobilization of troops of both nations on their respective frontiers. Financial embarrassment, however, was considered sufficient to restrain either government from precipitating war, and the trouble seems to have passed with the development of the Roumanian crisis.

Trouble with Roumania.—Since 1894, when the philo-Russian party gained the predominance in Bulgaria and began to regard Roumania somewhat in the light of an Austrian *protégé*, the long friendship between these two Balkan states has gradually waned. Roumania has looked with disfavor upon the growth of Russian influence south of her borders, fearing that in the event of some settlement of the "Eastern question"—that is, the readjustment of Turkish territory—not only Bulgaria, but her own dominions would be absorbed by the empire of the Czar. The open enmity of 1900 was brought about by the Bulgarian plan of annexing Macedonia. For several years efforts toward compassing this end have been made, chiefly through a Bulgarian committee. This committee was reorganized in June, 1899, and with the title "Supreme Macedo-Adrianopolitan Committee" began, apparently with the sanction of the authorities, to put in operation measures for raising funds. Assessments were made upon persons of wealth, including many of Macedonian origin, and Roumanians in Bulgaria and Bulgarians in Roumania. Refusals to pay the assessments were met by threats and severe pressure by the committee, and several persons who in Bucharest were opposing the annexation propaganda were assassinated, while, it was alleged, the committee had planned the assassination of King Carol. Roumania entered protest against the Bulgarian government, which made only evasive and unsatisfactory replies. Documentary evidence, particularly against the Bulgarian home minister, was secured by Roumania, and so bitter became the antagonism between the two nations that in September they both mobilized troops on their frontiers. But, as in the case with Servia, it was thought that neither government was financially able to carry on a war, and the only real danger was such a disturbance of the Balkan *status quo* as would draw the greater powers into serious disagreement or conflict. It was reported that a further aim of the Bulgarian committee was the actual annexation of Roumania and then, by aid of the strength thus acquired, the forcible seizure of the much-coveted province of Macedonia from Turkish rule. On November 22 the Roumanian court of assizes sentenced several members of the Macedonian committee for life or for long terms in prison for the

murders in Bucharest. It was thought that Bulgaria would acquiesce in the decision of the court. The president of the committee, M. Sarafof, who, it seems likely, ordered the murders, could not be apprehended by the authorities.

Other Events of 1900.—At the opening of the Sobranje in the latter part of October Prince Ferdinand said that the trouble with Roumania would probably be satisfactorily settled. He also announced that the Sultan of Turkey had issued an iradé for the conclusion of a free-trade treaty between the suzerain and vassal states. Such an arrangement, the prince said, not only would contribute to the prosperity of Bulgaria and Turkey, but indicated the friendly relations existing between the two states. The financial condition of the government was very unsound, and retrenchment seemed absolutely necessary. On December 5 the ministry of M. Ivanschoff resigned, and Prince Ferdinand appointed Dr. Radoslavoff to form a new cabinet. But later it was announced that M. Ivanschoff, as premier and minister of finance, had formed a cabinet, which, on the whole, was favorably regarded by the public. Since Stambuloff died the need of a strong hand in the Bulgarian government has been very noticeable.

A number of internal disorders occurred during the year, one of the most serious of which was a conflict between troops and the peasantry in the Varna district, 90 persons being killed and 372 wounded. A state of siege was thereupon declared in the districts of Varna, Rasgrad, Tirnova, Ristovatz, Shunla, and Rustchuk.

BULLER, General, Right Honorable Sir REDVERS HENRY, British commander in Natal during the South African War, was born in 1839, and entered the Sixtieth Rifles in 1858, beginning a career in which he has rendered much valuable service to England. He served in China in 1860, and in 1870 took part in the Red River expedition. He participated in the Ashantee War of 1874, the Kaffir War of 1878, and the Zulu War of 1878-79. He was chief of staff in the Boer War of 1881, and served in Egypt and the Soudan from 1882 to 1885. In 1885-86 he was deputy adjutant-general, and in the following year he became under-secretary for Ireland. He served as adjutant-general in 1890, and in 1891 was made lieutenant-general. In 1898 he was appointed to the command at Aldershot, and early in November, 1899 was placed at the head of an army corps and sent to replace General White as commander-in-chief of the South African forces. His attempts to relieve Ladysmith began inauspiciously. On December 15, 1899, while trying to force the passage of the Tugela at Colenso he was repulsed with the loss of 1150 men and 11 guns. Three days later Lord Roberts succeeded him as commander-in-chief, but Buller remained at the head of the army in Natal. On February 11 he made a second attempt to cross the Tugela and outflank the Boers, but the disaster at Spion Kop (see TRANSVAAL) drove him back. He came back again on February 5, and was repulsed for the third time. On February 14 he tried once more. Lord Roberts's invasion of the Orange Free State had weakened the besieging forces around Ladysmith, and after two weeks' fighting Buller's cavalry entered the town. His repeated failures had subjected him to violent criticism in England and abroad, and the harsh title of Ferryman of the Tugela had been bestowed on him. But when the real difficulties of the task that had been assigned him were recognized, public opinion turned in his favor, and admiration was expressed for the fine cool-headedness he had displayed, and the bulldog pertinacity with which he had stuck to his work. With his soldiers General Buller was always popular. In May and June he drove the Boers from Natal, and established communications with Lord Roberts, with whom he co-operated in the final campaign in northeastern Transvaal. In October he laid down his command and returned to England.

BÜLOW, BERNHARD COUNT VON, the eminent German minister of foreign affairs, was appointed to succeed Prince Hohenlohe in the chancellorship October, 1900. The new chancellor is 51 years of age, and has spent his life in diplomatic service. He entered the German foreign office in 1873, when his father was foreign secretary of Germany, and was successively secretary of the embassy in Rome, St. Petersburg and Vienna. During the Russo-Turkish War he was *chargé-d'affaires* at Athens. At the Berlin Congress he was one of the secretaries, and afterward served in diplomatic capacities in Paris and St. Petersburg. In 1888 he was appointed minister to Roumania, and while he was at Bucharest, Roumania joined the triple alliance, and the German-Roumanian treaty was consummated. He became minister to Italy in 1893, and in 1897 succeeded Baron von Bieberstein as foreign secretary. Count von Bülow has shown himself a man of force and vitality, with personal qualities that save him from making bitter enemies. The seizure of Kiaochow, which met with the opposition of the anti-expansionists shortly after his accession to office, and precipitated a heated debate in the *Reichstag*, brought his tact and resourcefulness to a test. As an instance of this, his phrase, "Germany wants a place in the sun," was often quoted. He won popular approval and the title of count in 1899 by the treaty with Spain, which resulted in Germany's acquisition of the Caroline, Palaos, and Spanish

Marianne islands, and the enthusiastic praise of the German nation for his easy winning of a large part of Samoa.

During several months of this year, when Prince Hohenlohe's health forced him to give up his administrative duties, Count von Bülow was practically conducting affairs with the emperor. He is looked upon as an aggressive statesman, who will not sacrifice the interests of the nation to favor certain classes, and who is evidently resolved upon keeping peace with Europe and maintaining satisfactory commercial relations with the United States. As spokesman for the emperor in the *Reichstag*, he ably defended the German policy of expansion in the Pacific and in China.

BUREAU OF AMERICAN ETHNOLOGY. See ANTHROPOLOGY IN AMERICA.

BUREAU OF ANIMAL INDUSTRY. See FILARIA; FOOD; and RABIES.

BURMA, a province of the Indian Empire, situated between Thibet on the north and Siam on the southeast, and bounded by the Indian provinces of Assam and Bengal on the west and Chinese territory on the east. It is divided into Lower and Upper Burma, with a combined area of 171,430 square miles, and a population (in 1891) of 7,605,560, mostly Buddhists. The chief town of Upper Burma is Mandalay, with a population of 188,815, and the chief town of Lower Burma is Rangoon, with a population of 180,324. The soil is very rich and well adapted to the cultivation of rice, which is the most important article of export. Minerals are abundant, especially in Upper Burma, where tin, coal, iron, jade, coal and petroleum are found in considerable quantities. The province is administered by a lieutenant-governor appointed by the governor-general, with the approval of the crown, and assisted by a nominated legislative council of nine members (five official and four non-official).

The gross revenue receipts for the year ending March 31, 1899, were Rx 7,518,468, and the expenditure, Rx 4,597,599. The total value of imports for the same year was Rx 11,680,840, while the exports amounted to Rx 16,466,744. The number of vessels engaged in the sea-borne trade during the year ending March 31, 1899, was 6344, with an aggregate tonnage of 4,133,436. The number of educational institutions has increased from 16,280 in 1897-98 to 16,331 in 1898-99, and the attendance from 259,649 to 270,257. The total amount spent by the government on education was Rx 968,680. There were 936 miles of railway open for traffic on March 31, 1899. The Myohoung-Nawngghio section of the Kunlow line and the Yawtaung section of the Sagaing-Alon line were opened for traffic on April 1, 1900. A bill, known as the Lower Burma Courts bill, was introduced into the Imperial Council on January 5, providing for the establishment of a chief court and a court of appeal in the province. On February 9, two members of the Burmo-Chinese Boundary Commission were killed at Monghem by the Was tribe, who made an unsuccessful attack on the commission's camp on February 17. A military expedition of British and Chinese troops attached to the commission was sent out against them, with the result that 60 of the offenders were killed and 2000 houses burned.

BURNS, ALEXANDER, D.D., LL.D., educator and Methodist clergyman, died at Toronto, Ontario, May 22, 1900. He was born in Castlewella, Ireland, in 1834, and in 1861 graduated at Victoria University, Cobourg, Ontario. He was called to the chair of mathematics at Iowa Wesleyan University, Mount Pleasant, and later became president of Simpson College, Indianola, Ia., retaining the position for ten years. He accepted the presidency of Hamilton (Ontario) Wesleyan College in 1878. In 1882 he was tried on a charge of heresy before the London (Ontario) conference and acquitted.

BURTON, Sir FREDERIC WILLIAM, Hon., LL.D., formerly director of the National Gallery, London, died at Kensington March 16, 1900. He was educated in Dublin, where he studied drawing under the brothers Brocas. He acquired a considerable reputation for his drawings of the figure and his portraits, his best known portrait being that of George Eliot, now in the National Portrait Gallery. He was a fellow of the Society of Antiquaries and a member of the Royal Hibernian Academy and the London Society of Painters in Water Colors. In 1874 he succeeded Sir Henry Boxall as director of the National Gallery, and retained that position till 1894. He was knighted in 1884.

BUTE, Marquis of, JOHN PATRICK CRICHTON STUART, the son of the second marquis, died October 9, 1900. He succeeded to the marquisate in the year of his birth, 1847, and by the development of his town of Cardiff became one of the wealthiest peers in Europe. While studying at Christ Church, Oxford, he was converted to Roman Catholicism, an event made memorable by Disraeli's *Lothair*. In spite of this fact, in 1891 the marquis was elected mayor of Cardiff and the following year lord rector of the University of Glasgow. He was a Conservative, but took no active part in politics. Of scholarly taste, he was a recognized authority in Byzantine art and history, and a most generous benefactor to institutions of learning. He gave a large hall to the University of Glasgow.

BUTTERFIELD, WILLIAM, F.S.A., English architect, died in London February 23, 1900. Born in September, 1814, he was a contemporary of Gilbert Scott and Augustus N. W. Pugin. He was a man of artistic genius, and "one of the most original of the ecclesiastical and collegiate architects of our time." Among his first important buildings was St. Augustine's College, Canterbury, and this, with the Church of All Saints', Margaret Street, London, consecrated in 1859, served to give him a prominent place among the highest class of architects. He gained a considerable reputation for introducing color into church and domestic edifices by the use of marble, bricks, and mosaic. In 1863 he completed St. Alban's, Holborn, and at the same time built the new chapel at Balliol College, Oxford. After the death of Keble in 1866 he undertook his most extensive work, the buildings of the college erected at Oxford to Keble's memory. Among many of his other important buildings are the quadrangle at Rugby school, the Melbourne cathedral, the grammar school and chapel at Exeter, St. Augustine's Church in South Kensington, and a part of the Merton College buildings at Oxford.

BUTTONS. During the last decade of the nineteenth century the manufacture of pearl buttons has become an important industry, forming the principal business of the people living along a section of the Mississippi River two hundred miles in extent, with its centre at Muscatine, Ia. Previous to this time the chief factories for making pearl buttons were in Eastern cities, and the material was imported from China and other foreign countries. About 1890 it was discovered that the shells of the fresh-water mussels of the Mississippi River made excellent buttons. There are about four hundred different varieties of mollusk in the river, but only a few of them are suitable for buttons. Of these the principal one is the *quadrula ebena* or "niggerhead," which has a thick shell, black or dark brown outside skin and glistening white interior. These clams are easily obtained on account of the shallowness of the river, and fishermen are at work the year around, in fact, those taken from under the ice in winter are said to be of superior quality. If the present wholesale practice of killing them, especially during the breeding season, continues, there is danger that the supply will be exhausted, while another danger menacing the industry is the pollution of the river by sewage. The mussel shells are first soaked in water for five or six days to make them less brittle. They are then sawed into blanks of proper thickness for a button, while a fine spray of water plays on the saw to keep the shell cool and to prevent the dust, which is very injurious to the respiratory organs. Circular disks are then cut from the blanks by means of a steel saw bent into cylindrical form. Then follows the polishing of and the depression of one of the surfaces in the centre by means of an emery wheel, after which the holes are drilled and the buttons are ready to be sorted, carded, and packed.

In 1899 the United States Fish and Fisheries Commission made a report on mussel fishing and the pearl button industry of the Mississippi River, in which it was stated that about 1500 men and women are employed at this work, with annual wages of \$150,000, and that in 1898 7000 tons of mussels were manufactured into 2,250,000 gross of buttons, having a market value of \$500,000.

CALIFORNIA, a Pacific coast State of the United States, has a land area of 155,980 square miles. The capital is Sacramento. California was admitted to the Union September 9, 1850.

Agriculture.—The following shows the production and value of the principal crops for 1900: Corn, 1,351,975 bushels, \$824,705; wheat, 28,543,628 bushels, \$16,555,304; oats, 1,477,771 bushels, \$679,775; barley, 14,856,170 bushels, \$6,388,153; rye, 502,580 bushels, \$291,496; potatoes, 2,788,032 bushels, \$1,477,657; hay, 2,708,171 tons, \$22,071,594. California ranked first among the States in the production of barley and third in the production of wheat. The production of oranges and lemons during the season 1900-01 was estimated at 22,000 carloads (7,150,000 boxes) as compared with 18,400 carloads (6,624,000 boxes) in 1899-1900. The bulletin of the National Association of Wool Manufacturers contained the following estimate of the wool product for 1900: Number of sheep, 1,907,430; wool, washed and unwashed, 13,352,010 pounds; scoured wool, 4,539,683 pounds.

Mineralogy.—The estimated amount of gold produced in 1900 was 695,497 fine ounces, valued at \$14,377,300; and silver, 912,800 fine ounces, valued at \$556,808. In the production of petroleum California gained 17.05 per cent. in 1899 over 1898, with an output in the former year of 2,642,095 barrels, valued at \$2,508,751. The total production of copper in 1899 was 23,915,486 pounds. The coal product reached its maximum figure in 1899, the output from 6 mines being 160,715 short tons, valued at the mines, \$428,333, an increase in tonnage of 11 per cent. over the product for 1898. Quarry products in 1899 were granite, sandstone, slate, marble, and limestone, with a total valuation of \$1,033,295.

Industries.—Shipments of redwood lumber in 1900 aggregated 209,001,022 feet, and were greater than in any previous year except 1899, when the shipments were

217,706,464 feet. The number of grain and fruit distilleries in operation during the fiscal year ended June 30, 1900, was 195. The total amount of fruit brandy produced was 3,061,363 gallons—more than 80 per cent. of the entire production of fruit brandy in the United States. The amount of spirits rectified was 2,572,529 gallons; distilled spirits gauged, 11,122,777 gallons; and fermented liquors produced, 753,582 barrels. In 1899 there were 485 manufacturers of cigars and 16 of tobacco, with a total production during the calendar year of 54,947,511 cigars, 23,905,850 cigarettes, and 184,074 pounds of tobacco.

Commerce.—During the fiscal year ended June 30, 1900, the imports of merchandise at Humboldt, Los Angeles, San Diego, and San Francisco aggregated \$49,441,831, an increase in a year of \$12,525,703; and the exports, \$43,361,078, an increase of \$11,520,545. The trade in gold and silver was: Imports at Los Angeles, San Diego, and San Francisco, \$13,734,548; and exports at San Francisco, \$9,528,309, making the total foreign trade of the year \$116,065,766, an increase of \$8,444,822 over the year 1898-99.

Railroads.—The new railway construction reported for the calendar year 1900 was 140.13 miles, giving the State a total mileage of 5601.5.

Banks.—On October 31, 1900, there were 39 national banks in operation and 17 in liquidation. The active capital aggregated \$11,012,500; circulation, \$4,619,975; deposits, \$37,358,958; and reserve, \$12,324,394. The State banks, August 11, 1900, numbered 178, and had capital, \$26,981,973; deposits, \$85,881,584, and resources, \$146,495,782; private banks, 19, with capital, \$890,142; deposits, \$1,629,687, and resources, \$2,798,391; and stock savings banks, 53, with capital, \$7,655,705; depositors, 216,534; deposits, \$158,167,462, and resources, \$173,872,500. The exchanges at the clearing houses at San Francisco and Los Angeles in the year ended September 30, 1900, aggregated \$1,131,975,069, an increase of \$130,140,317 in the year. The 151 building and loan associations in 1900 had a total membership of 37,780, and assets aggregating \$20,285,454.

National Guard.—The National Guard of California consists of 258 cavalry and 2991 infantry. The total number authorized is 6471, and the total number liable to military service is 250,000. The State appropriation for the support of the guard is \$154,247.

Education.—In 1899 the school population was 350,124; enrolment in public schools, 253,397; average daily attendance, 203,248. There were 8157 teachers (including some private school teachers), 3565 buildings used as schoolhouses, and property valued at \$18,682,634. The revenue was \$5,869,034; and expenditures, \$6,164,053, of which \$4,651,960 was for teachers' and superintendents' salaries. The average expenditure per pupil for the whole school year was \$30.83. There were 94 public high schools, with 462 teachers and 11,618 students; 63 private secondary schools, with 300 teachers and 2179 students; 4 public normal schools, with 77 teachers and 1842 students; and 1 private normal school, with 2 teachers and 22 female students. The 12 colleges and universities for men and for both sexes reported 371 professors and instructors, 4551 students, and a total income of \$805,065; and 2 colleges for women reported 52 professors and instructors, 224 students, and a total income of \$116,405. The professional schools comprised 5 theological schools, with 23 instructors and 90 students; 3 law schools, with 24 instructors and 315 students; and 5 medical schools, with 149 instructors and 548 students.

Population.—According to the United States census, the population in 1890 was 1,208,130, and in 1900, 1,485,053, an increase for the decade of 276,923, or 22.9 per cent. The four largest cities, with population in 1900, are: San Francisco, 342,782; Los Angeles, 102,479; Oakland, 66,960; and Sacramento, 29,282.

Elections.—The vote for governor in 1898 was: H. T. Gage, Republican, 148,354; Maguire, Fusionist, 129,261. The Legislature in 1899 consisted in the Senate of 26 Republicans and 14 Democrats, and in the House of 58 Republicans, 19 Democrats, 2 Populists, and an independent. As a result of the State elections the Legislature for 1901 will consist, in the Senate, of 34 Republicans and 6 Democrats, and in the House of 59 Republicans and 21 Democrats. The six representatives of California in the 57th Congress will be all Republicans: the State elections resulted in returning four of the representatives, and in electing F. L. Coombs in place of John A. Barham, and J. McLachlan in place of James C. Needham. In the national election of 1896 the State went Republican by a narrow majority, giving 143,373 votes for Bryan and 146,170 for McKinley. In 1900, however, only 124,985 votes were cast for Bryan, while 164,755 votes were cast for McKinley. McKinley's plurality was thus increased from 3000 to 40,000. As the Legislature had failed at its regular session in 1899 to elect a United States Senator for the full term beginning March 3, 1899, a special session was called for that purpose in February, 1900. On February 8, at a meeting of the joint assembly, Thomas R. Bard was elected.

Constitutional Amendments.—At the elections held in November several important constitutional amendments were adopted. Among these was one authorizing the

exemption from taxation of the property of Leland Stanford, Jr., University. The authorities and trustees of this institution have always held that as no tuition was charged to California students, the university conformed in all important respects to a State college, except that it was no charge upon the State, and that, therefore, it was only a simple act of justice to permit the university to use the entire interest from its funds to increase the efficiency and enlarge the scope of its educational work. It was pointed out, moreover, that Leland Stanford had attracted students from all parts of the world, had brought honor to the State, and had stimulated many improvements in the University of California which would not otherwise have been made. As the latter is a State institution some objection was made to giving any aid to Leland Stanford, on the ground that the latter was already a dangerous rival of the California University, and that the State should protect its own. An amendment to the constitution was also ratified exempting from taxation the property of the California School of Mechanical Arts, and a further amendment exempting property used exclusively for purposes of worship and religion. By means of a constitutional amendment California rendered negative a decision of the Supreme Court of the State declaring unconstitutional a primary law passed in 1897 because of a provision prescribing the qualifications for voting. By the amendment adopted in November the Legislature was authorized to make any and all regulations with reference to primaries. This amendment legalizes an act of the Legislature in 1899 making a new primary law in place of the one of 1897. By the law no validated primary elections are to be "held at the same time and place for all parties casting 3 per cent. of the vote. An official ballot with party columns and blank spaces to be filled in with names of delegates preferred is provided, and the expense of the primaries is a public charge." A proposed amendment to the constitution exempting from taxation State bonds and also local government bonds was rejected at the polls.

Federal Suit Against a State by Federal Corporation.—On May 14, 1900, the United States Supreme Court dismissed the suit brought in a federal court by the receivers of the Atlantic & Pacific Railroad Company, a corporation created under a congressional act of 1866, against J. R. McDonald, as treasurer of the State of California, to recover through him taxes paid to California in 1893. The court held that in suing J. R. McDonald as *treasurer* of the State, the railroad was in effect suing the State itself; that although the State had provided by legislation that corporations might, for the recovery of taxes, sue the State in the Superior Court of Sacramento, the State had not thereby consented to have suit brought against it in a federal court, and that the consent of the State was necessary under the constitution to legalize such a suit. To the contention of the railroad company that as a *federal* corporation it was entitled to bring suit against the State in a federal court under the constitutional clause which provided that the judicial power of the United States should extend to all cases arising under the United States laws and Constitution, the court stated that it was not the intent of this provision to permit a federal suit to be brought by any and all corporations created or authorized by congressional action.

On April 30, 1900, the United States Supreme Court handed down a decision declaring void an ordinance passed by the council of Los Angeles in 1897, requiring the Los Angeles Water Company to sell water at lower rates than it had at any time since acquiring its charter in 1868. See MUNICIPAL GOVERNMENT.

Legislature.—At an extra session of the California Legislature, which met on January 29, 1900, and adjourned on February 10, two important amendments to the constitution were ordered to be submitted to the electorate for ratification. These amendments, as summarized by the president of the American Bar Association, are as follows:

I. Charters for cities. Provides that any city of more than three thousand five hundred people may elect fifteen of its citizens as a board, to prepare and submit to the electors a city charter. If a majority favor the charter it is submitted to the Legislature as a whole, to be approved or rejected, without power of amendment or alteration. If approved it becomes the organic law of the municipality, superseding any existing charter, and all courts are required to take judicial notice thereof. At intervals of not less than ten years amendments may be submitted to the voters. If this amendment shall be adopted by the people it will inaugurate a most interesting effort at local self-government by municipalities.

II. Alterations in the Judiciary. Provides material changes of the constitution as it relates to the judiciary. The Supreme Court is reduced from seven judges to five, and is to be composed of one chief justice and four justices, who are to hold office for twelve years. All of the sessions are to be held in San Francisco. The State is divided into three appellate districts, in each of which there is to be a court of appeals of three judges, elected for twelve years. Its judgments are final, except where the decision conflicts with a previous decision of the Supreme Court or of another District Court of Appeals. In both the Supreme Court and the Court of

Appeals oral argument must be made unless waived by the parties, with the consent of the court. Not more than twenty cases shall be under submission for decision at any one time. No judge shall receive any monthly salary unless he shall take and file an oath that no cause remains undecided in his court for more than ninety days.

The Supreme Court has appellate jurisdiction direct from the Superior Courts (one of which is to be established in each county with large jurisdiction) in proceedings where the question is involved of the validity of a statute, or of an authority exercised under the United States, or any statute claimed to be repugnant to the Constitution or laws of the United States, or the constitutionality of any State statute, the legality of any tax or assessment, or questions of eminent domain or *quo warranto*, and in criminal cases, on decision of law alone, where the judgment is death or imprisonment for life, or questions involving the validity of city charters, or authority exercised thereunder. These proposed amendments were not voted upon in November, but an amendment, reorganizing the courts, and similar to this one, passed in 1900, was voted upon by the people and rejected.

San Francisco Water Supply.—In accordance with the mandates of the new charter of San Francisco (see MUNICIPAL GOVERNMENT), adopted in 1899, the Board of Supervisors, in whom the acting power of the city is vested, invited proposals early in 1900 from corporations able to sell to, or construct for the city, a water system. The most important offers received were from the Spring Valley Water-Works Company and from the Lake Tahoe Water Company. The former company, which is at present supplying the city with water, offered to sell its plant at a price to be determined by arbitration; the latter company offered to build water-works for the city, as follows: (1) Single pipe line, 30,000,000 gallons daily, for \$17,600,000; (2) double pipe line, same capacity, for \$20,405,000; (3) 30,000,000 gallons daily to San Francisco, and 100,000,000 gallons capacity above the intake reservoirs, for \$21,215,000; (4) same as (3), except 60,000,000 gallons to San Francisco, single pipe line, for \$29,772,000; (5) same as (4), except double pipe line, for \$32,660,000. In order to adequately provide for San Francisco's future needs, it seems probable that, if any of the Lake Tahoe Water Company's proposals were accepted, the fourth or fifth would be taken. The Spring Valley Company is capitalized at \$26,000,000, and the market value of its securities is \$28,000,000; hence it may be assumed that San Francisco, building or buying, would have to pay about \$30,000,000 for a satisfactory municipal water supply. Opinion seems divided as to whether it would benefit the city to do this. The present charge on San Francisco for water is about \$200 per 1,000,000 gallons, which, of course, is high (the Ramapo Company, for example, offered water to New York City for \$70 per 1,000,000 gallons, and it was estimated that such a contract would entail a total loss of \$200,000,000 to the city in 40 years). It is said, however, that the distance which water must be conducted to San Francisco, the uncertainty of the annual rainfall necessitating a large storage supply, and the great cost of fuel fully account for the high rates. Moreover, under a constitutional enactment of 1879, the City Board of Supervisors annually fix the rates which the company may charge for water during the ensuing year. These rates are based upon five per cent. interest, over and above taxes and costs of operation, upon the capital stock (about \$26,000,000) of the company. No allowance is made for a sinking fund or for extensive improvements or additional land purchases. If the present company, as is generally admitted, conducts its business as economically as the city could, the question seems to be simply whether San Francisco can or cannot employ its money more profitably than by making a permanent five per cent. investment. The question narrows to this, because under the State constitution the city already practically supervises the methods, charges, and finances of the company.

State Officers and National Representatives.—State officers for 1900: Executive—governor, H. T. Gage; lieutenant-governor, J. H. Neff; secretary of state, C. F. Curry; treasurer, T. Reeves; comptroller, E. P. Colgan; adjutant-general, W. H. Seamans; attorney-general, T. L. Ford; superintendent of education, T. J. Kirk; surveyor-general, M. J. Wright—all Republicans.

Judiciary: Supreme Court—chief justice, W. H. Beatty; associate justices, T. B. McFarland, C. H. Garoutte, R. C. Harrison, W. Van Dyke, F. W. Henshaw, J. Temple—all Republicans except Temple and Van Dyke; clerk, G. W. Root—Republican.

State officers for 1901: Executive—same as in 1900. Judiciary—same as in 1900.

Congressional representatives for 1900 (56th Congress): Republicans—John A. Barham, Victor H. Metcalf, Julius Kahn, Eugene F. Loud, Russell J. Waters, James C. Needham. Democratic—Marion de Vries.

Congressional representatives for 1901 (57th Congress): Frank L. Coombs (Napa), Samuel D. Woods (Stockton), Victor H. Metcalf (Oakland), Julius Kahn (San Francisco), Eugene F. Loud (San Francisco), James McLachlan (Pasadena), and James C. Needham (Modesto)—all Republicans.

Senators for 1900 (56th Congress): George C. Perkins (until 1903) from Oakland; and Thomas R. Bard (until 1905) from Hueneme—both Republicans.

Senators for 1901 (57th Congress): Same as for 1900.

CALIFORNIA, UNIVERSITY OF, Berkeley, Cal., founded 1868. The number of students at California has increased fourfold during the past decade, the special reason assigned for the rapid increase of students being the development of the public high schools, which are well provided for by the State. The university stands well up in the list of those institutions having a large registration in their graduate departments, but it is of interest to note that in the college year 1899-1900 the percentage of higher degrees granted to the enrolment in the graduate department was only 11.8, as compared with 15.9 per cent. at Stanford, 20.2 per cent. at Cornell, and 48.4 per cent. at Harvard. The president points out that the existence of free tuition would seem to make it easy for a student to attach himself to the graduate department while waiting some opportunity for occupation without pursuing serious work, but he calls attention at the same time to the fact that the university has in no way relaxed for such students the high standard set for its graduate work. Of the 219 students in the graduate department, 168 were not studying for a degree. Another fact of interest in relation to the student body of California is the percentage of women students, which has been gradually rising. In 1896-97 the percentage of women in the university was 39.94; in 1899-1900 it was 46. In the general courses the proportion of women in 1896-97 was 53.74 per cent.; in 1899-1900, 63.24 per cent., or nearly two-thirds of the student body in the colleges of letters, social sciences, natural sciences, and commerce. This tendency, which is national, caused Mrs. Stanford to insert as a condition to her latest endowment of the Leland Stanford University (*q.v.*) the restriction of women students to 500 in number. There were at the University of California during the college year a faculty of about 325 professors and instructors and a student attendance, excluding 433 students in the summer session and 162 in extension courses, of 2661, as follows: Graduate department, 219; college of letters, 266; college of social sciences, 826; college of natural sciences, 141; college of commerce, 21; and the 5 colleges of applied sciences: Agriculture, 31; mechanics, 144; mining, 191; civil engineering, 50, and chemistry, 113; Mark Hopkins Institute of Art, 171; Hastings College of Law, 106; medical department, 153; post-graduate medical department, 8; dental department, 149; California College of Pharmacy, 82; veterinary department, 2; graduate students at the Lick Observatory, 2. It will be noted that a high percentage of students were engaged in the courses devoted to the humanities.

The president's report gives a detailed list of Mrs. Phoebe A. Hearst's gifts during the past three years, amounting to \$271,567, though this is far less than Mrs. Hearst has actually expended for the benefit, directly or indirectly, of the university. Mrs. Hearst is soon to erect new buildings, costing \$8,000,000. The income for educational purposes, which excludes the income of special funds, was \$320,719.86. The present library collection comprises 80,224 books, with an increase for the year of about 4000. Events of special interest discussed in the last report of the president are the recent discoveries and researches at the Lick Observatory; the preparation of a series of text-books for the study of Chinese and Japanese by the department of Oriental languages; the botanical, zoological, and paleontological expeditions; the extension of farming institutes by the agricultural college; and a summer course for practical farmers to be given in 1901 by Professor L. H. Bailey, of the botanical department of Cornell. It is of interest to compare the report of the dean of the veterinary department, who advises the closing of the veterinary courses through lack of students and funds, with the report of the notable success of the comparatively new school at Cornell and with the report of the proposed closing of that at Harvard, which is the oldest in the country. See **PSYCHOLOGY, EXPERIMENTAL, and UNIVERSITIES AND COLLEGES.**

CAMBODIA, one of the countries comprising French Indo-China, bordering on the Gulf of Siam, consists of 57 provinces, the total area of which, according to a recent estimate, is 40,530 square miles, and the population 1,500,000, of whom 250,000 are Chinese and Anamites and 40,000 Malays. The two most important towns are Pnom-Penh, the capital, with 50,000 inhabitants, and Kampot, a port, inaccessible, however, to sea-going vessels. The country has been a French protectorate since 1863. Administration is in the hands of a native ruler, King Norodom, who ascended the throne in 1889, under the government of Indo-China, which is represented by an official French resident at Pnom-Penh and by subordinate French residents in the several provinces. The estimated expenditure for 1899, including about 415,000 piastres for the royal family, was 1,997,600 piastres. The principal products are rice, tobacco, betel, sugar, indigo, pepper, cinnamon, coffee, maize, and cotton. The exports include tobacco, rice, cotton, and salted fish; and the imports,

textiles, wine, and salt. Most of the foreign trade is carried on through Saigon in Cochín-China. See **INDO-CHINA**.

The son of King Norodom, Prince Inkanthor, during a visit to Europe submitted in the fall of 1900 a memorial to the French government, setting forth various grievances against the governor-general of Indo-China and his subordinates. The principal complaints were that the administrative authority of the French was gradually increasing, to the humiliation of the native royalty, and that by the arbitrary and, as the prince alleged, illegal suppression of gambling the king was deprived of an annual revenue of 300,000 francs. King Norodom, it was said, upon learning of the memorial, stated that the prince had not been authorized to present such a document to the French government.

CAMERON, Sir **RODERICK WILLIAM**, Canadian merchant and financier, who died October 19, 1900, was a prominent figure in the business and social life of New York. Born in Ontario in 1825, he early engaged in the commission business in New York, and in 1852 established a line of packet ships between New York and Australia. The firm of R. W. Cameron & Company was a great factor in trade. In 1883 Sir Roderick received the honor of knighthood for his services as honorary commissioner from Canada to the Sydney Exhibition in 1879 and to the Melbourne Exhibition the year following.

CAMEROON, a German protectorate of West Africa with a coast line of 199 miles on the Bight of Biafra, between the Rio del Rey on the north and the Campo River on the south. The country is bounded on the north by the British Niger region and French Soudan, extending in a northeasterly direction to Lake Tchad, while on the east it touches French Soudan and French Congo, and on the south French Congo. The estimated area is 191,130 square miles, and the estimated population, consisting of Bantu negroes near the coast and Soudan negroes in the interior, is placed at 3,500,000. In 1899 the white inhabitants numbered only about 425, of whom 348 were Germans. Cameroon, which became a German protectorate in 1884, is administered by an imperial governor. The seat of administration is Cameroon, the principal town in the country. There is a small military force of about 600 men, most of whom are natives. Two government schools, with about 200 pupils, have been established, and four missionary societies are directing schools that have about 5000 pupils. The rainfall is large, and the climate is not healthful for Europeans. The soil in the coast region is fertile, and cacao, tobacco, and coffee are cultivated; attempts are also being made in the culture of rubber, cloves, vanilla, pepper, and ginger. A region embracing about 34,000 square miles has been conceded to the Northwestern Cameroon Company, which has undertaken to develop agriculture, mining, and other industry in the country, to encourage immigration, and to improve the means of communication. Revenue accrues mainly from import duties, but is not sufficient to cover the expenditure, the deficit being paid by the imperial government. The revenue in the fiscal year 1899 amounted to 1,251,387 marks; the imperial grant for the fiscal year 1901 is 1,197,700 marks. In the year 1897-98 the value of the imports was placed at 7,128,153 marks, and exports, 3,920,194 marks; in 1898-99, imports, 10,638,955 marks and exports, 5,145,822 marks. The principal imports are cotton textiles, alcoholic liquors, iron and steel wares, and salt. The chief exports in 1898-99 were valued as follows in marks: Gum, 1,928,080; palm kernels, 1,365,608; palm oil, 893,361; cacao, 813,115; ivory, 598,471. In 1895 the cacao export amounted to 83,000 kilogrammes; in 1899, 200,000 kilogrammes. A submarine telegraph connects Cameroon with Bonny in Southern Nigeria. See **COLONIES**.

CAMPION, **HUBERT**, C.B., British rear-admiral, retired, died at Lee, Kent, April 13, 1900, at the age of 74 years. He entered the navy in 1842 and saw active service in the Crimean War. He was senior lieutenant of the *Vesuvius*, the only ship that took part in the battle of the Alma, and was in command during the hurricane at Balaclava. He participated in all the operations at Kertch and in the Sea of Azoff; in the latter part of these he was placed in command of the gunboat *Ardent*. He was decorated for his services in the Crimean War.

CAMPOS, Marshal **ARSENIO MARTINEZ DE**, Spanish general and statesman, died September 23, 1900. Born in 1834, he first served in the campaign of Morocco under General O'Donnell, and in 1864 was sent as a colonel of the army in Cuba. Returning in 1870, he joined the army of the north in repelling the Carlist rebellion. When King Amadeus abdicated three years later, and a republican government was formed, De Campos's opposition to the new order of things brought about his imprisonment. But obtaining his liberty in order to fight the Carlists, he was *mariscal de campo* in the army which raised the siege of Bilbao in 1874, and for his services in quelling the uprising was promoted lieutenant-general. Meanwhile De Campos was openly conspiring on behalf of Don Alfonso, and in conjunction with General Jovellar made the military pronunciamiento which gave the throne to Alfonso II. The new government now gave De Campos the power to direct the subjugation of the Carlists. He first drove them from Catalonia, then taking command of the army of the north,

brought the war to a close by defeating the Carlists at Pene de Plata in 1876. The government rewarded him with the highest command, captain-general of the army. From 1876 to 1878 De Campos was commander-in-chief of the army in Cuba, and under him the Spanish army, hitherto kept in check by the Cubans, was uniformly victorious. De Campos appreciated the need of concession to the insurgents, and on his return to Spain, having accepted the portfolio of war and the presidency of the council, he tried to make good his promises to the Cubans. Meeting with no success, he resigned. Holding office again from 1881 to 1883, in coalition with Señor Sagasta, he steadily opposed the project of building a Pyrenean railroad on the ground of its opening Spain to French attacks. In 1885 he was president of the senate. Three years later, being appointed captain-general of New Castile, he resigned the post in order to take command of the forces which were sent to Cuba in 1895 to quell the insurrection caused by Spain's non-fulfilment of promises. His policy of concession, which brought no glory to the Spanish arms, was severely criticised by the home government. When recalled the following year, to be succeeded by General Weyler, De Campos so far vindicated his policy that the queen regent thanked him for his services and looked upon him as a trusted friend in the following dynastic troubles. No cabinet was formed without his advice. While some have praised his conciliatory methods others condemned them as indicating a cowardly unwillingness to espouse an unpopular or unsuccessful cause.

CANADA, DOMINION OF, consists of all the northern part of North America, with the exception of the crown colony of Newfoundland, to which Labrador belongs, and of Alaska, which belongs to the United States. Canada is the largest of all the British possessions, its known area in 1900 being 3,653,946 square miles, of which 3,048,711 were land surface and 605,235 square miles water surface. This area, however, is exclusive of the district of Franklin, which was organized October 2, 1895, but has not yet been fully surveyed. The relative size of Canada as a British possession may be seen from the fact that the entire area of Australia is computed at 3,031,169 square miles, that of British India at 964,993 square miles, while the United Kingdom contains only 121,115 square miles. The population of Canada, exclusive of Newfoundland, which has 210,000 inhabitants, amounted in 1900 to about 5,800,000. Of this number the province of Ontario has 2,114,321 inhabitants, and the province of Quebec 1,488,586. The French in Canada number 1,415,090, and the Indians approximately 100,000. The capital of the Dominion is Ottawa, with a population of 55,000, and the chief cities are Montreal, 250,000 population; Toronto, 195,987 population; Quebec, 75,000 population; Halifax, 45,000 population, and St. John, 42,500 population. The provinces, and the date at which they were brought under the federal government, are as follows: Ontario, Quebec, Nova Scotia, and New Brunswick, united to form the Dominion federation, in 1867; Manitoba joined in 1870, British Columbia in 1871, and Prince Edward Island in 1873. Besides these provinces there are the territories and Arctic islands, with an area equal to about two-thirds of the whole. The territories have been divided into districts as follows: Keewatin, Assiniboia, Saskatchewan, Alberta, Athabasca, McKenzie, Ungara, Franklin, and Yukon.

Agriculture.—During the fiscal year ending June 30, 1899, the exports of animal and agricultural products, all domestic, amounted to \$68,140,758, a decrease from the previous year of \$7,694,100. Of the exports, \$58,887,282 were sent to England, and \$5,367,973 to the United States. The exports of agricultural products included wheat, \$7,784,487; flour of wheat, \$3,105,288; oats, \$3,268,388; peas, \$1,955,598; oatmeal, \$396,568, and beans, \$239,035. The exports of live stock included 12,384 horses, valued at \$898,063; 211,847 cattle, valued at \$8,522,835, and 405,322 sheep, valued at \$1,540,857. The most marked change in the cattle exports of Canada since 1894 has been the increase of exports to the United States. In 1894, under the operation of a joint cattle quarantine between the two countries, only 256 cattle were exported to the United States. Through the efforts made by the Canadian minister of agriculture this quarantine was removed on February 1, 1897. As a result the export of cattle to the United States reached the number of 87,905 in 1898, and 92,834 in 1899. Meats of all kinds were exported to the value of \$10,716,143; eggs, \$1,267,063; butter, \$3,700,873; cheese, \$16,776,765, nearly all of which went to Great Britain, and but an insignificant part to the United States. In the matter of imports of animal and agricultural products the proportion between the two countries was reversed, the total value of such imports from Great Britain in 1899 having been \$2,213,779, as against \$19,418,564 from the United States. Of the articles imported into Canada, hides, wool, seed, flax, and raw tobacco were among the most important. The value of corn imported from the United States was \$8,966,890; of hides, \$1,942,154; of raw tobacco, \$1,878,725. A great increase has taken place in Canada's exports of dairy products. In 1868 cheese, of domestic produce, was exported to the value of \$620,543; in 1899, the cheese exports amounted to \$16,776,765. Within the last few years a system of cold storage has been introduced, both on cars and steamships, which has developed the export of butter. In 1899 butter could be sent

to Montreal from 32 different points, and all these routes were provided with refrigerated cars. In the fiscal year of 1868, butter was exported to the value of \$1,608,042, and in 1899 to the value of \$3,700,875; of this last amount, \$3,526,007, represented exports to Great Britain.

Mineral Products.—In the calendar year 1899 Canadian mineral products had an aggregate value of \$48,438,247, an increase in the year of \$9,777,237. That mining in Canada is rapidly assuming importance is seen not only by this increase, but by the fact that the production in 1898 also showed an increase over that of 1897 of over \$9,000,000. The mineral products of most value in 1899 were: Gold, \$21,260,437, as against \$13,775,420 for 1898; coal, \$9,992,086; nickel, \$2,067,840; silver, \$1,834,371; petroleum, \$1,202,020; lead, \$977,250; cement, \$633,291; asbestos, \$483,299; natural gas, \$387,271; coke, \$350,022; gypsum, \$257,329; iron ore, \$248,372; salt, \$234,520, and terra cotta, \$220,258. Exports of the minerals amounted to \$14,143,149, and of this sum, \$12,913,311 represented exports to the United States. Nova Scotia produced the largest amount of coal—3,148,822 tons (2000 pounds each) of the total 5,046,508 tons produced. The output of gold in the Yukon district was estimated at \$16,000,000, as against \$10,000,000 in 1898. British Columbia produced gold to the amount of \$4,202,473; Nova Scotia to \$617,604; Ontario to \$420,444; the Saskatchewan district to \$15,000, and Quebec to \$4916. The famous Sudbury nickel mines in Ontario produced 5,744,000 pounds of fine nickel, and the amount of nickel ore or matter exported to the United States was 14,428,063 pounds. There were in Canada at the beginning of the year 1900 nine completed blast furnaces. Besides these there were building at Cape Breton four blast furnaces, which will have an annual capacity of some 400,000 tons of pig iron. On December 18, 1900, a blast furnace was opened at Midland, on the southeast of Georgian Bay, Lake Huron, in the province of Ontario, whose output was estimated to be 150 tons of pig iron a day. The position of this furnace will allow ore to be brought by boat from the iron mines on Lake Superior, and especially from the Helen mine at Michipicoten, with the minimum expense for transportation. The furnace has also the advantage of being situated very nearly in the centre of the great iron using provinces of Canada, Ontario, and Quebec. As iron and steel products, manufactured, or to be used in manufactures, constitute by far the greatest item in Canada's imports, this recent movement to obtain for herself pig iron, the base of all the iron and steel products, is likely to be of far-reaching importance in Canada's industrial development.

Fisheries.—The great extent of Canada's fresh-water and sea boundaries make her fisheries an industry of much importance. On the east, the sea line from the south of Labrador to the Bay of Fundy is some 5000 miles; on the west, the coast line of British Columbia is 7180 miles; while the Great Lakes add thousands of miles more to the Canadian water boundaries. The last detailed statistics of the fisheries industry are for the calendar year 1898. The value of the yield of all kinds was as follows: Nova Scotia, \$7,226,035; British Columbia, \$3,713,101; New Brunswick, \$3,849,357; Quebec, \$1,761,440; Ontario, \$1,433,632; Prince Edward Island, \$1,070,206, and Manitoba and the Northwest Territories, \$613,355; total, \$19,667,126, a decrease from the previous year of \$3,116,420. This decrease is mainly to be accounted for by the yield in British Columbia, which was \$6,138,865 in 1897, and \$3,713,101 in 1898. The chief values in the total catch were: Lobsters, \$3,887,939; salmon, \$3,159,306; herring, \$1,987,454; mackerel, \$694,591; haddock, \$681,557; cod, \$2,986,513; trout, \$693,826; white fish, \$622,174; smelts, 420,142; and sardines, \$398,222. There was a total of 81,534 men employed on vessels and other boats connected with all fisheries, and a capital investment in vessels, nets, traps, and other fishing apparatus of \$9,860,097. The government expended in connection with fisheries for the fiscal year ending June 30, 1899, \$417,601, of which sum \$159,459 was for bounties, and \$105,133 for fish breeding. The total seal catch for the season of 1898 was 28,552; of this number 16,943 seals were caught off the Copper Island coast; 9746 off the coast of British Columbia, and 1453 in Bering Sea. The value of the skins was \$285,520. This industry has shown a rapid decline since 1894, when 95,048 seals were killed. In 1895 the number was 73,614; in 1896, 55,677, and in 1897, 30,410. For the calendar year of 1899 the total yield of all kinds was estimated at \$21,891,706, an increase of more than \$2,000,000 over the preceding year.

Commerce.—The total imports for the fiscal year ending June 30, 1899, aggregated in value \$162,764,308; the exports were \$158,896,905, thus showing an excess of imports of \$3,867,403, whereas in the previous year there had been an excess of exports of \$23,829,630. The duties collected on imports amounted to \$25,734,229. The movement in gold and silver coin and bullion was, imports, \$4,705,134; exports, \$4,016,025. The aggregate trade of Canada increased \$18,097,809 over 1898, as against an increase in 1898 of \$45,606,415 over 1897. Of the total imports, including coin and bullion, \$101,642,950 came from the United States, \$36,945,465 from Great Britain, \$7,382,499 from Germany, and \$3,879,872 from France. Of the total exports, including coin and bullion, \$99,091,855 went to Great Britain, \$45,133,521 to the United States, \$2,219,569

to Germany, and \$1,557,722 to France. Of the imports, animals and articles of food amounted to \$29,011,195; crude articles used in the processes of domestic industries were \$29,241,888; articles for use in the mechanical arts and in manufacturing, were \$26,116,487; manufactured articles, \$53,132,914; luxuries, etc., \$11,843,975. Of the exports from Canada, mining products were \$13,368,150; fish products, \$9,909,662; lumber, timber, etc., \$28,021,529; animals, wool, pelts, etc., \$46,743,130; agricultural products, \$22,952,915; manufactures, \$11,706,707. Partial returns of the commerce of Canada for the fiscal year ending June 30, 1900, showed that the total commerce of the dominion was \$372,000,000, a gain of \$50,000,000 over the preceding year. The exports of goods produced in Canada amounted to \$152,818,917 exclusive of gold and silver, and the imports of goods intended for home consumption, to \$183,209,273. In 1899 the imports of goods for home consumption were \$154,051,593, so that in one year these imports increased in the amount of \$29,157,680. Exports of agricultural products for the year were very large, reaching in value to \$27,429,121; manufactured exports were \$13,692,773; forest products, \$30,050,018; mining products, \$14,106,764; and exports of fish, \$11,303,028. The largest items of export were animals and their products, which reached to the value of \$55,897,800.

Banks.—The official bank statement for June 30, 1899, showed an aggregate paid-up capital of \$63,674,085; notes in circulation, \$39,097,708; total liabilities, \$316,330,478; total assets, \$408,936,411. The average deposits for the calendar year 1899 were \$266,504,528, and the average monthly reserve of all banks was \$28,958,989. Exchanges at the clearing houses in Montreal, Halifax, Toronto, Hamilton, Winnipeg, St. John, and at Vancouver and Victoria, which were established in 1898, aggregated for the year \$1,625,680,194, an increase over the preceding year of \$235,660,850. On June 30, 1899, the government savings banks numbered 25, and had 49,320 depositors and \$15,470,110 in deposits; the post-office savings banks numbered 838, and had 142,141 depositors and \$34,771,605 in deposits—total for the two classes, 863 offices, 191,461 depositors, and \$50,241,715 in deposits.

Railways and Canals.—On June 30, 1899, there were 17,358 miles of track laid and 17,250 miles in operation, besides 28 miles of track in Nova Scotia belonging to private corporations. The separate railways number 165, of which 25 constitute the Grand Trunk system, 25 the Canadian Pacific system, 9 are electric railways having 135 miles of rails, and the remainder are more or less consolidated in minor systems. The Canadian Pacific system has 6682.91 miles of track laid; the Grand Trunk, 3161.98, and the Intercolonial & Prince Edward Island, 1510.96. The value of the common stock of all railways was \$270,325,406; preferred, \$120,974,864; bonded debt, \$362,053,495. Grants by the Dominion government up to June 30, 1899, aggregated \$155,646,419; by provincial governments, \$30,656,725; and by municipalities, \$15,740,668. The earnings of all roads for the fiscal year amounted to \$62,243,784, and the operating expenses to \$40,706,217. The traffic returns show that 19,133,365 passengers and 31,211,753 tons of freight were carried. Up to June 30, 1899, there had been expended for canal works and maintenance a total of \$92,036,524, of which \$15,632,245 was appropriated from income. The most costly canal, the Welland, had cost for construction up to that date, \$24,238,255, of which \$16,600,015 was expended subsequent to confederation. The total revenue from all the canals since confederation was \$12,079,274, an annual average of \$377,477. The revenue for the fiscal year of 1898 was \$407,663, and for the fiscal year of 1899, \$369,044. During the navigation season of 1898 the traffic through all Canadian canals was represented by 23,320 Canadian vessels, of 4,201,916 tonnage and 6128 United States vessels, of 3,624,463 tonnage. The tolls amounted to \$325,149.

Post-offices and Telegraphs.—On June 30, 1899, post-offices in the Dominion and Newfoundland numbered 9420, and in the fiscal year then ended the department handled 150,375,000 letters, 27,450,000 postal cards, 3,675,400 registered letters, and 119,528,506 newspapers, periodicals, books, and parcels. The revenue and expenditure of the post-office, not including the Yukon and Atlin districts, were: Revenue, \$4,325,432; expenditure, \$4,724,349, leaving a deficit of \$398,917, as against a deficit of \$47,602 in 1898. Of the registered letters only 136 containing money failed to be accounted for. There were 1779 money-order offices in Canada, and 1,061,373 orders issued calling for \$14,467,997. Orders issued and payable in Canada amounted to \$12,001,224; those drawn in Canada and payable in other countries, \$2,466,773; and those issued in other countries and payable in Canada, \$2,221,385. Postal notes, calling for from 20 cents to \$5, were issued to an aggregate value of \$769,217.90, from which the government obtained a revenue of \$9353.53. The Dominion government owned 275½ miles of land telegraph lines and 239 (statute) miles of cables, with 161 offices. The revenue from the government telegraph lines was \$10,473, and the expenditure, \$88,504. The non-governmental lines in Canada, from Quebec west and in the Maritime provinces are owned by the Great Northwestern Telegraph Company, the Canadian Pacific Railway Company, and the Western Union Telegraph Company. These companies had between them, in 1899, 30,084 miles of telegraph line, 78,276 miles of wire, 2667 offices, and handled in the year 4,786,101

messages. There were 58 telephone companies in Canada, owning 1500 offices, 43,902 sets of instruments, and 82,219 miles of wire.

Schools and Libraries.—Reports of the public, high, normal and model schools, principally for 1899, give the following summary: Number of public schools, 17,772; other schools, 953; pupils in public schools, 946,955; in other schools, 138,374; average attendance in public schools, 567,431; teachers in public schools, 22,388; in other schools, 4645; revenue from government, \$5,066,220; from other sources, \$4,661,577; and expenditure, \$9,046,330. The higher institutions comprise 17 universities, with 5984 students, or an average of 352 students. Of these universities, McGill University and the University of Toronto have over 1000 students each. There are 19 colleges with 2169 students; 19 classical colleges in Quebec, mostly affiliated with Laval University, with 5484 students; 7 colleges for women, with about 1000 students; and 5 agricultural colleges, with 190 students. For further details, see titles of the several provinces. There are 535 libraries in Canada, of which 21 are law libraries, 380 public libraries, and 89 belonging to societies or educational institutions. The total number of books in all libraries is 1,972,056, and of pamphlets, 122,746. The Province of Ontario has 418 of Canada's libraries, and 955,225 of the books. Quebec comes next, with 50 libraries and 567,812 books. The libraries of the other provinces are as follows: Nova Scotia, 26, with 97,521 books; New Brunswick, 15, with 54,787 books; Manitoba, 8, with 34,730 books; British Columbia, 10, with 11,303 books; Prince Edward Island, 3, with 8528 books; the territories, 1, with 2150 books.

Finances.—The revenue of the consolidated fund for the year ending June 30, 1899, was \$46,741,250; the expenditure therefrom was \$41,903,501, leaving an excess of revenue of \$4,837,749. These figures showed a marked increase over those for 1898, when the revenue was \$40,555,238 and the expenditure \$38,832,526, giving an excess of revenue of \$1,722,712. The customs revenue was \$25,734,229; the internal revenue, \$9,661,260; the postal service (gross) and miscellaneous receipts, \$8,589,403. The total expenditures amounted to \$43,024,051, of which the largest item was for charges on the national debt, \$13,510,854. Post-office expenses were \$4,724,349; subsidies to the provinces, \$4,250,636; railways and canals, including the collection of revenue, \$4,631,254; public works, including the collection of revenue, \$2,068,572; militia and defence, \$2,112,292; collection of customs revenue, \$1,037,636; Yukon Territory, \$1,098,379; and civil government, \$1,411,813. The gross debt in the Dominion was \$345,160,902, the assets were \$78,886,364, leaving a net debt of \$266,274,538, an increase of about \$2,500,000 over the preceding year. Of the total assets, \$61,161,535 were interest bearing. Sinking funds held amounted to \$43,358,643. For the fiscal year ending June 30, 1900, the revenue of the consolidated fund was \$51,000,783 and the expenditure \$42,976,051, thus leaving a surplus of \$8,024,732. The revenue for the year was received as follows: From customs, \$28,374,147; from the excise, \$9,868,075; from the post-office, \$3,205,535; from public works, \$5,205,274; and from miscellaneous sources, \$4,347,752.

Business Failures.—There were 1355 business failures in Canada in the calendar year 1900, with liabilities amounting to \$11,613,208. In 1899 there were 1287 failures, and the liabilities amounted to \$10,658,675. In both of these years the number of failures and the amount of the liabilities were much smaller than in 1898, when there were 2118 failures, and the liabilities aggregated \$17,169,683.

Government.—The constitution of the Dominion of Canada and the extent of the Dominion's independent legislative and executive power are laid down in the act of 1867 of the British Parliament, by which the Canadian federation was created and allowed. The executive power of the Dominion is vested in a governor-general appointed by the crown, and in a privy council appointed by the governor. The Federal Parliament consists of a Senate and House of Commons. Members of the Senate are nominated for life, as follows: From Ontario and Quebec, 24 each; from Nova Scotia and New Brunswick, 10 each; from Manitoba and Prince Edward Island, 4 each; from British Columbia, 3; and from the territories, 2. The members of the House of Commons are elected every 5 years, as follows: From Ontario, 92; from Quebec, 65; from Nova Scotia, 20; from New Brunswick, 14; from Manitoba, 7; from British Columbia, 6; from Prince Edward Island, 5; and from the territories, 4. But this representation is subject to alteration every 10 years in accordance with the returns of the census. Local self-government is provided for by provincial legislatures and by a territorial legislature. These legislatures, except in the provinces of Quebec and Nova Scotia, are single-chambered. The executive power of each province and of the territories is vested in a lieutenant-governor nominated by the governor-general with the advice of the Privy Council. The governor-general also appoints the members of the provincial, county, and superior courts, from which cases, either civil or criminal, may be taken on appeal to the Supreme Court at Ottawa. The principal executive officers of Canada in 1900 were as follows: Governor-general, the Right Hon. the Earl of Minto, appointed in 1898; premier and the president of the Privy Council, Right Hon. Sir Wilfrid Laurier;



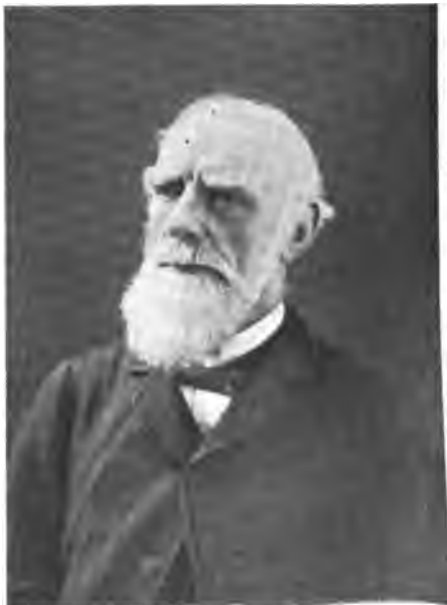
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FOUR CANADIAN STATESMEN.—1. Sir Wilfred Laurier. 2. Earl Minto. 3. Sir Charles Tupper. 4. Lord Strathcona.

secretary of state, Hon. R. W. Scott; finance, Hon. W. S. Fielding; solicitor-general, Hon. C. Fitzpatrick.

Population.—As officially estimated in 1899, the population of Canada was 5,312,500, an increase over the previous year of 64,185. The Indian population was estimated at 98,981, a decrease within the year of 1112. The regular decennial census in Canada was taken in 1891, when the population was found to be 4,833,239. In 1881 the population was 4,324,810. From these figures and from the estimated population in 1899 it is inferred that the census in 1901 will show a comparatively small gain over the previous census.

Indians.—The estimated Indian population in Canada in 1899 was 98,981. Of this number 20,753 were in Ontario, 10,690 in Quebec, 24,696 in British Columbia, 23,808 in Manitoba and the Northwest Territories within the treaty limits and 15,099 in the Northwest Territories without the treaty limits. There were 281 Indian schools, carrying on the rolls 9606 names, and having an average attendance of 6167. On the Indian farms 104,143 acres of land were cultivated. During the year 65,632 acres were sold for the benefit of the Indians, bringing in \$41,971. The amount of land still held by the government for sale was 495,814 acres. The expenditure made during the fiscal year from the Indian fund was \$238,111, and the expenditure from parliamentary appropriations, \$986,255, a total of \$1,224,366.

Political Parties.—The chief political parties are, as in Great Britain, known as the Conservatives and the Liberals. From the establishment of the Dominion in 1867 until 1896 the Conservatives, with the exception of one interval of five years, controlled the government. Sir John A. Macdonald was, till his death in 1891, the leader of the Conservative party during this period. Immediately prior to the dissolution of Parliament in the spring of 1896 Sir Charles Tupper (Conservative) became premier. In the general elections of that year the Conservatives advocated protection with a preferential tariff in favor of Great Britain and her colonies. They also favored extensive internal improvements and interference on behalf of the Roman Catholics in Manitoba. The Liberals, under Sir Wilfrid Laurier, favored a tariff for revenue only, extension of the franchise, and non-interference with provincial politics, that is, with the Catholics of Manitoba. Although the united Catholic influence was exerted on behalf of the Conservatives, the Liberals won by large majorities. There were returned to the House as the result of the elections 118 Liberals, 86 Conservatives, and 8 Independents, who leaned toward the Liberals. In 1897 the Liberals, notwithstanding their declaration for free trade, instituted a preferential tariff of 25 per cent. in favor of English goods, and in 1900 this was increased to 33½ per cent. Sir Wilfrid Laurier claimed that much trade benefit had accrued to Canada through the tariff, but the Conservatives denied this, and advocated its continuance only in case that Great Britain should make it reciprocal. The issue thus taken was much debated prior to the general election (*q.v.*) of 1900, and another factor of importance arose from the fact that Mr. Tarte, a member of the Liberal cabinet, had vigorously opposed the aid of Canada being extended to Great Britain in the South African War. As a result of the election the Liberals were returned to power with slightly increased majorities.

Parliament.—Parliament was opened by Lord Minto at Ottawa, Ontario, on February 1. In his opening address Lord Minto said that he had been instructed by her majesty to convey to Parliament her majesty's appreciation of the patriotism displayed by Canada in sending volunteers to South Africa, and that this act, following the preferential tariff granted by Canada, had had the happiest effect in intensifying and cementing the cordial relations subsisting between the two countries. Lord Minto also congratulated Parliament upon the practical completion of the Welland Canal, which, he said, had attracted wide attention from shippers and others interested in western transportation, and there was good reason to believe that when the necessary facilities, then in progress, for the quick and inexpensive handling of ocean traffic, had been completed, Canadian ports would control a much larger share of the traffic of the west. The action of the government in furnishing a Transvaal contingent came up for discussion, when the customary motion was made as to the address to the crown. M. Bourassa, the member from Labelle, Quebec, who resigned his seat as a protest against the policy of the government and was re-elected by acclamation, objected to the passing of the address until the correspondence between Canada and the crown with respect to the South African War was published. The motion was therefore postponed, and later the Transvaal subject was extensively discussed. On March 13 the House, with only ten members voting in the negative, passed a motion approving the action of the government in supporting Great Britain. The motion was greeted with great applause. On March 23 it was announced that Canadian government securities would in the future be listed in Great Britain as trust fund securities. Among the more important legislative measures proposed by the ministry was a bill providing for equipping and paying the Canadian contingents sent to South Africa, a bill making provision for the more

careful inspection of foodstuffs intended for export, a bill for the establishment of a federal board of conciliation for the settlement of labor disputes, a bill amending the banking laws and providing for the renewal of charters, a bill making regulations as to the amount of interest payable on judgments handed down by courts of law, a bill making provision for the taking of the regular decennial census in 1901, a bill for the amendment of the Criminal Code, and a bill providing for the redistribution of election districts upon an equitable basis in order to undo the effects of the gerrymandering of 1882. The Canadian banking law, passed on June 14, provides for the extension for ten years of banking charters which would have otherwise expired in 1901; the law also made regulations governing circulation, forbidding the issuing of notes, and providing, in the interest and for the protection of depositors, of a closer supervision over the affairs of banks which had suspended. The bill for the readjustment of election districts, discussed in the succeeding paragraph, was defeated in the Senate. The bill for the further regulation of banks was passed. Parliament was prorogued on July 18.

Redistribution.—The long-standing matter of redistribution was again considered during the parliamentary session of 1900. This vexed question arose from the action of the Conservative party in 1882 and 1892, in passing redistribution bills whereby as the Liberals claimed, district boundaries had been fixed very disadvantageously to the party out of power. The Liberals, in fulfilment of their pledge to secure a more equitable basis of representation in Parliament, introduced bills to that effect in the Commons in 1899 and again in 1900. These were in both cases passed by the House and rejected by the Senate. The Conservatives alleged that the bills were unlawful, since the Canadian constitution provided that readjustment of representation should take place after each decennial census, and hence the bills could not be considered until 1902. The Liberals replied that no redistribution, according to the population of the several provinces, and as contemplated by the constitution, was intended, but only a measure to redress the wrongs committed by the Conservatives, who had, for their own ends, disregarded the county boundaries. The Senate, however, contended that the changes sought would amount virtually to a decennial redistribution, since in some localities the number of members would be increased and in others diminished; so the measures were defeated. As the census will be taken in 1901, it is practically certain that no redistribution legislation will take place before 1902.

Copyright.—Through the efforts of the Society of Authors of London and with the approval of the Canadian Society of Authors and the Canadian publishers, the Canadian Parliament, in July, 1900, passed a bill designed to protect authors and publishers. Canada has been in the Copyright Union since 1886, but authors and publishers have suffered from the importation of cheap pirated reprints from the United States. An act passed in 1889 provided that a work by an English author should be entirely manufactured in Canada and issued within a month of its publication in England; otherwise any publisher might apply for license to print and publish it on promise to pay 10 per cent. royalty. The English author was frequently unable to make advance contracts with Canadian publishers, against whom he had poor recourse if the publishers afterward issued his work and failed to pay the royalty. By the new act English copyright carries with it copyright in Canada. The author may, however, arrange with a Canadian agent for exclusive right to publish, in which case the importation of non-Canadian editions is prohibited. In the latter case press work must be done in Canada, but plates may be imported. The features of the former act which were most obnoxious were the licensing system and the requirement that the work must be reset in Canada to secure copyright.

Labor Legislation.—On July 13 a labor act was passed providing for conciliation and arbitration for the settlement of labor disputes, establishing a Ministry of Labor, and making provision for the publication of a monthly Labor Gazette. A law was also passed in the interests of trade unions analogous to the law of New York State requiring stone used in public buildings to be dressed within the State. The Canadian law requires that all railroads receiving government grants shall use steel rails made in Canada, providing, however—and in this respect the law differs from that of New York—that they can be secured in Canada upon as favorable terms as they can elsewhere. See LABOR LEGISLATION (Canada).

Prohibition.—During the latter part of the parliamentary session the question of enacting a law prohibiting the sale of intoxicants throughout the Dominion was extensively discussed. The Liberal party during their campaign in 1896 had promised to permit the advisability of prohibition to be put to a popular vote, and it was understood that they would abide by the verdict thus given. Accordingly, on September 29, 1898, the following question was voted upon throughout the Dominion: "Are you in favor of the passing of an act prohibiting the importation, manufacture, or sale of spirits, wine, ale, beer, cider, and all other alcoholic liquors for use as beverages?" Not much more than one-half of the electorate voted on the

question, and though throughout the Dominion a majority of about 18,000 voted for prohibition, the rich and influential province of Quebec went anti-prohibition by 40,000. The ministry was thus placed in an embarrassing position, for while nominally the prohibitionists had won, they had done so mainly by default and by a small majority. Moreover, Quebec would consider it unfair if her decisive negative vote were disregarded. The consideration of these facts induced Parliament, in July, 1900, to reject the proposed legislation in favor of prohibition and in accordance with the results of the plebiscite by a vote of 98 to 48. Sir Wilfrid Laurier defended the action of the government on the ground that the real wish of the country was as yet uncertain, and that the matter was one to which full opportunity of discussion should be given. He thought the time for decisive legislation had not yet come. Later in the year it was announced that the Dominion Alliance had abandoned its attempt to secure prohibition through a Dominion act, but would endeavor instead to secure prohibition in every province by the enactment of laws by the provincial governments.

Preferential Trade.—Canada's preferential trade with Great Britain was much discussed during the year, and was one of the determining factors of the elections. This preferential trade began in 1897, when, owing mainly to the outburst of patriotic feeling attendant upon the queen's jubilee, Canada granted a preferential duty of $12\frac{1}{2}$ per cent.—that is, a reduction of $12\frac{1}{2}$ per cent. in the customs duties—upon British goods entering Canada. In 1898 this preferential duty was increased to 25 per cent., and early in 1900 the ministry announced that beginning on July 1 the preferential duty would be increased to $33\frac{1}{3}$ per cent. The whole question of the desirability of the preferential trade was brought up in the Canadian Parliament, and on March 20 that body passed a resolution by a vote of 91 to 46 endorsing the policy of the ministry. The attitude of the Conservatives was expressed on March 30, when Sir Charles Tupper moved a resolution that "a system of mutual trade preferences between Great Britain and Ireland and the colonies would greatly stimulate increased production in, and commerce between, these countries, and would thus promote and maintain the unity of the empire, and nothing which falls short of the complete realization of such a policy should be considered as final and satisfactory." Opinion in England as to the possibility of such a system as advocated by Sir Charles Tupper seemed to be decidedly adverse. The Hon. Joseph Chamberlain denied the truth of the reports that he had advocated a *Zollverein*, expressed doubts as to its feasibility, and said that in any case the suggestion and plan therefor must originate with the colonies. A more emphatic adverse opinion was given by Sir Michael Hicks-Beach on October 24, in which he said: "I do not believe in the idea of England's giving preferential duties in favor of our colonies. Our great imports from our colonies are our raw material and our food, and to suppose that England, after fifty years' experience of what the freedom of taxation on imports of raw materials and food means, will deliberately resort to the taxation of raw material and food from foreign countries, is, to my mind, to suppose an impossibility." The Liberal party took this and similar expressions as proof of the wisdom of their action in giving Britain a preferential trade. On this point, however, the Conservatives got rather the better of the argument by pointing out that Canada, having already made her concessions gratis, an absolute inducement had been held out to Great Britain to withhold all offers in the way of mutual preferential trade and to declare its impossibility. The Conservatives also thought that future events would demonstrate that they were in the right, for the competition of Germany and the United States, from which Great Britain would suffer increasingly, would necessarily drive her sooner or later into forming some kind of a protective commercial union with the colonies. Referring, moreover, to the policy of the Liberals to foster close relations with Great Britain, the Conservatives said shrewdly that no plan had ever been proposed which would promote the unity of the empire so completely as that of mutual trade preferences, by which the tie of self-interest would be added to the sentimental tie that bound the colonies to the crown. In these views the Maritime Board of Trade concurred, by a resolution passed in August, adding that mutual preferential trade would assist in developing the material resources of the several colonies and dependencies, hold a restraining influence upon emigration, diverting it from foreign countries to countries within the empire, and be conducive to an equitable system of commercial intercourse between the empire and the nations of the world. One of the main purposes of the preferential tariff granted by the Liberals was to reduce imports from the United States and to increase those of Great Britain. The Liberals admitted that in this respect their tariff had not accomplished all that had been hoped for, and this admission was later verified when returns were made public showing the commerce of Canada with the United Kingdom and the United States for the fiscal year ending June 30, 1900. From these returns it appeared that since 1898 imports from the United Kingdom

had increased 32 per cent., while imports from the United States had increased 37 per cent. In the calendar year of 1900, moreover, the imports from the United States exceeded all previous values, being \$102,900,250 for that year, as against \$86,336,310 for 1899; \$90,388,065 for 1898, and \$72,627,690 for 1897. In 1894 imports from the United States were \$51,294,199, so that since that time imports have more than doubled, thus showing a demand on Canada's part for American goods so strong that a tariff in favor of Great Britain will probably have but little countervailing effect.

Imperial Unity.—The last few years have witnessed a great increase of patriotic feeling in Canada for the unity of the British Empire. Beginning with the queen's jubilee in 1897, this feeling approached its climax when the Canadian troops were sent to the South African War. At that time the Canadian press was ringing with loyal sentiments. As a result, a reactionary feeling against England started in Quebec among the French-Canadians. On January 5 the *Semaine-Religieuse*, the official organ of the Archbishop of Quebec, contained an article in which England was denounced for its unjust treatment of the French-Canadian Catholics, and the fervid hope was expressed that England would be defeated in Africa: "Lift up your eyes, French-Canadians," said the article, "for the day of your redemption is at hand. You, beaten and conquered by England, ever hated and oppressed by the race unfriendly to you, whose children are forced to speak the tongues of their oppressors in the schools of Manitoba, you shall at length see the star of liberty rise for you and your rights respected by those who have so long violated them." The publication of this anonymous article created a sensation throughout Canada, and much feeling was for the time expressed against the French-Canadians. But the political and religious leaders of the French in Canada immediately repudiated the article and reaffirmed their loyalty to the queen. The Archbishop of Ottawa said in this connection: "We recognize in England a generous and powerful nation, under whose flag Providence placed us to protect our religion and our liberties. We feel that we, the small French-Canadian race, have all to lose if England's prestige is lowered." M. J. I. Tarte, minister of public works, strongly endorsed this sentiment on January 31, and said that while the French-Canadians would always remain proud of their blood, their political interests were identical with those of their fellow-citizens, and they "would not change the institutions under which they lived so happily for any other institutions under the sun." The absolute loyalty of Sir Wilfrid Laurier, himself a French-Canadian, was also effective at this time in quelling the elements of irritation. Later in the year there was considerable discussion of imperial federation, based upon colonial representation in the British Parliament. Sir Charles Tupper, the Conservative leader, opposed this on the ground that the advantages which Canada would gain by being represented in the English House would be more than counterbalanced by the increased taxation to which she would be subjected. That imperial federation in any form is as yet a long way off was indicated by Mr. Chamberlain, when he said on April 23: "So far the colonies have not made any definite suggestion with respect to representation, and I am convinced that nothing will be more fatal than a premature discussion of details. I do not think the time has arrived to suggest to the colonies the form which imperial unity should take. It is absurd to suppose that self-governing colonies like Canada would sacrifice independence for the sake of a single vote in the House of Commons."

Transvaal Contingents.—The action of the Canadian government in sending two contingents of troops to South Africa proved a matter of much practical importance in Dominion affairs. For an extensive discussion was precipitated upon the whole question of imperial unity (*q.v.*), and this discussion and the various issues growing out of it played an important part in deciding the results of the fall elections (*q.v.*). It may be said, indeed, that the political result of the government's action was largely out of all proportion to the number of troops sent and to the expense entailed. For the troops sent, including the Strathcona Horse, were less than three thousand, and the estimated expense to the Dominion government was not more than \$2,000,000. Yet both in England and in Canada the matter was a fruitful topic of congratulation or debate for fully a year. The main causes of this were (1) that it was everywhere felt that the dispatching of the volunteers indicated once for all Canada's attitude toward England, and (2) that the volunteers did effective work in South Africa, and (3) that Canada, though she disclaimed it through her ministry, had really established a new and important precedent, and (4) that the approaching Canadian elections gave all the foregoing subjects a very timely interest as subjects of exhaustive discussion.

The details of the sending of the troops were as follows: After consultation with the colonial secretary, Earl Minto, on October 15, sent word to Mr. Chamberlain that Canada would send a regiment to the war and would pay for their equipment and transportation. This regiment, numbering 57 officers and 1224 men, sailed from

Quebec on October 30 and landed at Cape Town on November 29, when they were immediately sent to the front. On November 2 Canada offered to send a second contingent, and on December 18 it was announced that this offer had been accepted. This contingent of 976 men and 41 officers sailed in three detachments on January 21, January 27, and February 21 respectively. In the meantime, on January 11, Lord Stratcona, Canadian high commissioner in London, agreed to equip and send to South Africa at his own expense some 500 mounted volunteer riflemen, to be enlisted from the northwest provinces. On March 16 these troops to the number of 537 left Halifax and arrived at Cape Town on April 10. The Canadian troops won wide admiration by their conduct in the war. Warm praise was accorded them by Lord Roberts for their gallantry in leading the charge which resulted in the surrender of General Cronje at Paardeberg. On May 22 Mr. Chamberlain cabled to "congratulate Canada on the great service rendered by the Canadian artillery in the relief of Mafeking." On June 7 the Canadian House passed a congratulatory address to the queen, mentioning the fall of Pretoria and other British successes, in the joy over which Canada, "through the active co-operation of her sons on the battle-field, was entitled to share." Toward the last of the year the Canadian volunteers began to return, the first contingent reaching Canada on November 1, and being received with much patriotic demonstration.

Elections.—The Liberals, under the premiership of Sir Wilfrid Laurier, came into power in June 23, 1896. Their majority at that time was 32, but this number was at first increased through by-elections to 57 and afterward dropped to 45. In August, 1900, the Liberals, having retained their majority during the entire intervening period, the dissolution of Parliament was announced and a general election ordered for November 7. This call for an election amounted virtually to asking the country for a vote of confidence in the government. The government stood pre-eminently for closer relations with Great Britain, and had expressed its position, first, by instituting a preferential tariff in favor of goods exported from the United Kingdom into Canada and, second, by sending Canadian troops to the war in South Africa without waiting for the consent of Parliament. The Conservatives claimed that Canada should grant reduced rates on English goods only in case that England returned the compliment, gave up free trade, and formed with the colonies a *Zollverein*. With respect to the sending of the volunteers to South Africa, the Conservatives stated that while they fully approved of this act, considered by itself, they believed that a dangerous precedent had been established in dispatching the troops without authorization of Parliament. The Liberals retorted that it was absurd to believe that England would depart from her traditional free-trade policy for the comparatively small amount involved in Canadian commerce; and that preferential trade paid Canada by reducing the prices not alone on English imports, but also through the resulting competition in American imports. As to the volunteers, the sentiment of the country had been unanimously in favor of sending them, the convening of Parliament would have entailed a very large expense, and the ministry had specifically stipulated that their action should not be taken to constitute a precedent. As a minor issue, so far as principle was concerned, but a very large one practically, the Liberals pointed to the great prosperity which the country had enjoyed under their rule and to the increased commerce and exports, and inferentially claimed that all these things were due to the wise legislation of their party. In any event, they said, better "let well enough alone." The Conservatives, unable to deny the evident prosperity of Canada, were forced back upon general and personal accusations. M. Tarte, minister of public works, had, it was said, engaged in public contracts which were obviously doubtful and probably dishonest; moreover, he had been anti-English to the point of disloyalty. The last estimate made by the Conservative ministry of the annual public expense was \$41,702,383; the last estimate of the Liberals was \$53,000,000; the difference represented neither public improvements nor a normal increase in federal obligations, but only the heedlessness and extravagance of the administration. An interesting feature of the election canvass was the endeavor which each party made to poll the French vote. The Liberals had to muffle the pro-English tendency of their administration and at the same time not deny it, and the Conservatives had to emphasize the solidarity and aloofness of Canadian interests in such a manner as to prevent the Liberals from twitting them with being anti-imperial. Both parties during the canvass in the French sections were in much the same plight as was Mr. Bryan, who could not emphasize silver without alienating the bulk of the anti-imperialists, nor repudiate it without losing the Populist and Silver-Republican vote. Taking the campaign as a whole, it may be said that the Liberals were in power, had gained the confidence of the people, and the Conservative party had no effective and clear-cut issue with which to oust them. The result of the election was a sweeping victory for the Liberal party. The representatives returned to Parliament from the different provinces are as follows:

	Lib.	Con.	Ind.		Lib.	Con.	Ind.
Ontario	34	54	4	Manitoba	2	3	2
Quebec	57	7	1	Prince Edward Island..	3	2	—
Nova Scotia	15	5	—	Northwest Territories..	2	—	2
New Brunswick.....	9	5	—	British Columbia.....	3	2	1
				Total.....	125	78	10

It will be seen that in Ontario the ministry lost ground, its representatives from that province being reduced from 51 to 34. This is in part explained by the dissatisfaction felt on the part of the Prohibitionists of Ontario with the failure of the government to respect the results of the plebiscite. The race feeling against M. Tarte, and in a minor degree against the premier, both of whom are Catholic French-Canadians, also had weight, as did the charge that the government had failed to keep its promises of retrenchment in expenditure and reduction of the public debt. The great gains of the government in Quebec, where the Conservatives elected only seven members, were in part due to the popularity of Sir Wilfrid Laurier and the desire of the French-Canadians to keep one of their own race, and the first to be premier, in office. But the race cry against Laurier, which was raised by the Conservatives in Ontario, produced a reaction for him in Quebec out of all proportion to the opposition in the former province. That the canvass in Quebec, outside of this personal affair, was not conducted chiefly on racial and religious lines is shown by the fact that there are fewer French-Canadians in the new parliament than there were in the old, and that in a French-speaking Roman Catholic district the Conservative candidate was defeated by a Liberal whose language is English and who is a Protestant.

One of the striking results of the election was the defeat of several Conservative leaders. Sir Charles Tupper, leading the Opposition, was defeated for the first time in forty years, Cape Breton rejecting him by about five hundred votes. Immediately after the election he announced that in view of the fact that he was in his eightieth year he would retire from public life, although he had been offered constituencies in every province of Canada. Hugh John MacDonald, the son of the late Conservative leader, Sir John A. MacDonald, was likewise defeated. The entry of Hugh MacDonald into Dominion politics, by his resignation of the premiership of Manitoba, had been expected to greatly strengthen the Conservative cause. Defeat also was accorded to the Hon. George E. Foster in New Brunswick, to the Hon. Peter White in Ontario, and to Messrs. Bergeron, Caron, and Faillon in Quebec. M. Bergeron had been especially active in condemning the course of the government in sending the volunteers to South Africa.

Ottawa Fire.—On April 26 a fire occurred which destroyed nearly all the buildings of Hull and a large number of those of Ottawa. Some 15,000 people were rendered homeless, and the factories and mills on which, roughly speaking, the people of the two cities depended for a living were mostly burned to the ground. The damage was estimated at \$15,000,000, but this sum would be largely increased if the permanent injury to the industries of the cities were taken into account. Hull, which before the fire contained about 12,000 inhabitants, is situated on the north side of the Ottawa River; and Ottawa, the capital of Canada, with some 45,000 inhabitants, is directly opposite Hull, on the south of the river. A suspension bridge connected the two cities. The fire started in a small wooden building in Hull and was carried by a strong northwest gale down toward the shore, where were situated extensive lumber yards and the Eddy match factory and paper pulp mills. When these latter blazed up the burning embers set the suspension bridge on fire and also the lumber piles on the south, or Ottawa, side of the river. The fire department, though reinforced by aid from other cities, offered little check to the conflagration, and Ottawa would have been as completely burned out as Hull if the wind had not shifted to the southeast. In Hull the water-works building, court-house, jail, post-office, and nearly all business places were burned. The destruction of the registry office necessitated a special act of the Quebec Legislature to re-establish the land titles. In Ottawa the Union Station, coal-sheds, and other property of the Canadian Pacific Railway were burned. The capitol buildings, however, were spared, being on an eminence and to the east of the track of the fire. It was estimated that 3000 buildings in all were burned. As most of the available lumber was destroyed—150,000,000 feet, of a value of \$3,000,000—rebuilding was greatly delayed. A relief fund of \$500,000 was contributed, of which the Dominion government appropriated \$100,000.

CANALS. The canal work of 1900 was largely a record of projects for future construction, divided quite equally between American and European enterprises.

American Enterprises.—The promoters of the long-projected canal, designed to cross Cape Cod between Barnstable Bay and Buzzards Bay, continued their efforts during 1900 to finance their schemes. In February, 1900, a bill was introduced into

Congress to incorporate the Lake Erie & Ohio River Ship Canal, to run from Pittsburgh, Penn., by way of the Ohio, Beaver, and Mahoning rivers to Niles, O., and thence to Lake Erie, with branches to Greenville, Penn., and Warren, O. The bill called for a depth of 15 feet and a cross-section of 2000 square feet. In March, 1900, the trustees of the sanitary district of Chicago submitted a memorial to Congress, advocating the construction of a waterway, consisting partly of canal from Chicago, Ill., by way of the drainage canal and the Desplaines, Illinois, and Mississippi rivers to St. Louis, Mo. A depth of 14 feet was recommended with a channel 300 feet wide, and a supply of 10,000 cubic feet of water per second from Lake Michigan. The memorial set forth that the most expensive part of the work had already been accomplished by the construction of the Chicago drainage canal from Lake Michigan to Lockport, Ill., 28 miles, and that the remainder of the waterway could be built for \$25,000,000. In April, 1900, a bill was introduced into Congress providing for the construction of a canal 100 feet wide and 30 feet deep to connect deep water in the Delaware Bay with deep water in the Chesapeake. During the same month a bill was introduced calling for a canal from Weymouth Fore River, at Boston Harbor, to the Taunton River and Narragansett Bay, at Fall River, Mass., 37½ miles long, with 19 miles of canal proper. The present sea route between the points named is 170 miles by the inside route and 225 miles by the outside route. An attempt was made early in 1900 to secure congressional action in favor of a canal from Duluth to Grand Forks, N. Dak., 350 miles.

In addition to these miscellaneous canal schemes, a number of plans were proposed and discussed during the year, including projects for improving the New York State canals, for the construction of a deep waterway from the Great Lakes to the Atlantic Ocean, and a transisthmian canal across Central America. At the 1899-1900 session of the New York State Legislature \$200,000 were appropriated for making a survey of the Erie, Oswego, and Champlain canals, in order to determine the cost of enlarging them, so as to accommodate barges of 1200 tons' capacity. This survey was practically completed during 1900, but the results had not been made public at the end of the year.

The final report of the United States Board of Engineers, appointed to investigate and report upon the most available route for a deep waterway connecting the Great Lakes with the Atlantic Ocean, was made public on July 7, 1900. The report described the work done as follows: Two routes are considered for a canal from Lake Erie to Lake Ontario—one from Tonawanda by way of Lockport to Olcutt, at the mouth of Eighteen-mile Creek, a distance of 25 miles; the other from Lasalle, below Tonawanda, on the Niagara River, to Lewiston, on the Niagara River below the falls, a distance of 9 miles. This latter route was recommended, though it presents some serious engineering difficulties. For six miles the whole cut is through solid rock, and the canal ends at Lewiston with a descent of nearly 320 feet, requiring eight double locks, six of which would have a lift of 40 feet each, and two 39.4 feet each. To pass from Lake Ontario to the Hudson River, two routes were considered. One was from Oswego, on Lake Ontario, up the Oswego River to Lake Oneida, across that lake, then traversing the divide at Rome to the Mohawk Valley, and down the Mohawk River to Schenectady, then across country to Norman's Kill, avoiding the great water-power interests at Cohoes and Troy, and reaching the Hudson in the southern suburbs of Albany. The Hudson will require improvement as far south from this point as Germantown, about 25 miles from Albany. The mouth of Norman's Kill is just 140.7 miles from the Battery at New York. The other route from Lake Ontario to New York is down the St. Lawrence River to Lake St. Francis, and then across to Lake Champlain, which is entered a few miles above Rouse's Point. The lake is followed to Whitehall, at the southern extremity of the narrows. From there a direct cut is made across to the Hudson at Fort Edward, a little below Glens Falls. This route becomes identical with the first at the mouth of Norman's Kill at Albany. The estimated cost of these two routes from Lake Erie to the Atlantic are as follows:

Champlain route.....	\$183,420,600
Oswego-Mohawk route.....	199,396,300

The report of the Isthmian Canal Commission was submitted to Congress on December 4, 1900. Briefly summarized, this report recommends the construction of a canal on the Nicaragua route, following the location made by the Walker Commission of 1897-99. The dimensions chosen are a depth at mean low water of 35 feet, a bottom width of 150 feet and locks 740 by 84 by 35 feet. The estimate of cost is \$200,540,000, including in this amount a double system of locks throughout, in order to permit navigation to continue while a lock is under repair. By dispensing with one set of locks and narrowing the bottom width to 100 feet, the estimate of cost is reduced to \$163,913,000. It is estimated that two years would be required for preparatory work, including the formation of a harbor at Greytown; and eight years

would be needed for building the great dam in the San Juan River, making the total time required for the completion of the canal ten years. The traffic which will use the canal is estimated at 7,030,027 tons in the year 1909. The Panama route is reported to be the only one which can be considered in competition with that through Nicaragua, and the cost of completing a canal at Panama of the same dimensions as those fixed on for the Nicaragua route is estimated at \$142,342,579, or \$58,000,000 less than the cost of the Nicaragua route. No method has been found, however, by which the United States can obtain entire control and ownership of the Panama enterprise, and even if it could do so there is reason to believe that the price would be such as to make the total cost to the United States not less than the cost of a canal by the Nicaragua route. The fact that the Panama route is further from the United States more than offsets the shorter time required for the passage of vessels from ocean to ocean.

Foreign Enterprises.—The Elbe and Trave Canal in Germany was opened by the Emperor of Germany on June 16, 1900. It has been under construction for five years, and has cost about \$5,831,000, of which Prussia contributed \$1,785,000 and the old Hansa town of Lubeck \$4,046,000. The length of the new canal is about 41 miles, and it is the second to join the North Sea and the Baltic, following the Kaiser Wilhelm Canal (or Kiel Canal), built about five years ago at a cost of \$37,128,000. The breadth of the new canal is 72 feet; breadth of the locks, 46 feet; length of locks, 261 feet; depth of locks, 8 feet 2 inches. It is crossed by 29 bridges, erected at a cost of \$1,000,000. There are 7 locks, 5 being between Lubeck and the Mölner See (the summit point of the canal), and two between Mölner See and Faunenberg-on-the-Elbe. At this point it may be noted that the Germans began experiments during 1900 with electric towing on the Finow Canal, between Berlin and Stettin. A track of 1-metre gauge was laid along the bank of the canal, having one 9-pound and one 18-pound rail, laid partly on cross-ties and partly on concrete blocks. The larger rail serves for the return current, and has bolted to it a rack, which gears with a spur wheel on the locomotive. The locomotive is 6 feet 10 inches by 4 feet 10 inches, mounted on four wheels, with a wheel base of 3 feet 6 inches, and weighing 2 tons. It is fitted with a 12 horse-power motor, current for which is furnished by a 9-kilowatt dynamo, driven by a 15-horse-power engine. The current is 500 volts, and is transmitted by a wire carried on wooden poles 23 feet high and about 120 feet apart. The boats are 132 feet long and 15 feet 6 inches beam, and carry from 150 to 175 tons on a draught of 4 feet 9 inches. During 1900 the Stettin-Swinemund Canal, with a length of 35 miles, has been dredged throughout, and is now open to steamers drawing 22 feet of water. Swinemund is on the Baltic Sea. Among the various projects for European canals may be mentioned one connecting the Danube a little below Vienna, Austria, with the Adriatic Sea at Trieste, a distance of about 319 miles. Herr Wagenfaher, of Vienna, is said to have the concession for this canal, the construction of which will cost some \$120,000,000. Late in 1900 a canal from Liege to Antwerp, in Belgium, was being seriously discussed, in order to connect the prosperous city of Liege with the sea and make it, like the city of Manchester, England, a seaport. The original promoter of the scheme was Mr. Joseph Redonti, who is now dead. Mr. Redonti's plans have recently been put in practical shape by Louis Hubin and Gaston Delville, who propose a canal 84 miles long, 200 feet wide, and 23 feet deep from Antwerp to Liege, with locks at Liege, Hasselt, Herenthals, and Antwerp. The difference in level to be overcome by locks would be 175 feet, and it is thought that 13 single locks and 1 double lock would be sufficient. The total estimated cost of the work is \$25,200,000.

CANARIES or CANARY ISLANDS, a group of islands situated in the Atlantic Ocean off the northwest coast of Africa, and constituting a separate province of the Spanish kingdom. The principal islands are Teneriffe, Grand Canaria, Palma, Fuerteventura, Ferro, and Lanzarote. The total area of the group is 2808 square miles and the population is now estimated at 300,000. Teneriffe is the seat of the administration of the province as well as of the Spanish possessions along the African coast. The principal agricultural products of the province are potatoes, bananas, and tomatoes, which are mostly exported to Great Britain. The province also produces some sugar, which goes entirely to Spain, where it is admitted free of duty. The imports to the province for 1898 were estimated at \$1,534,441, of which \$780,945 came from Great Britain. The principal articles of import are cereals, cotton goods, and manures. In 1900 the Spanish government gave the concession of levying port taxes in the province to a provincial company for a period of 10 years at 2,000,000 pesetas per year. As a result of this transaction the tonnage dues, landing and other charges have been entirely abolished, and the duties on many articles considerably reduced.

CANCER. An increase in the mortality from cancer in all of the large cities of the United States is shown by statistics published in 1900 by Dr. G. Betton Massey.

In San Francisco the ratio has risen from 16.5 cases in 100,000 population in 1866 to 103.6 cases in 100,000 population in 1898. In Boston the rate in 1887 was triple that in 1863. The mortality from cancer has doubled in the largest cities in the past 28 years, Massey estimates that there are 100,000 cases of cancer in the United States at present, and states that 49,800 persons died from the disease in 1898. Clowes, a physical chemist of London, England, has been secured by the New York State Cancer Laboratory to investigate the cause of the disease.

The X-rays have been used in the treatment of cancer during the past year. Ordinarily four exposures every alternate day are made to the rays, then an interval of about two weeks is allowed and the treatment is resumed. Additional exposures are made according to the severity of the superficial inflammation caused. The results reached are a disappearance of pain, a lessening of discharge with a disappearance of offensive odor, and very little inflammation. The tumor rarely diminishes in size.

CANDIA. See CRETE.

CANOEING. The sport of canoeing, both by nature and history, seems always to have possessed an element of romance. The modern canoe, modelled by Macgregor and Baden-Powell on the lines of the graceful Indian birchbark craft, came into being only thirty years ago. It has ever since been popular with aquatic sportsmen, and the sport which it represents has come to be identified with the few recreations which are distinguished for their adherence to the amateur spirit. The record of American canoeing in 1900 shows a somewhat diminished interest in racing, but a decided impetus in general cruising and camping, for which purposes the canoe is adapted *par excellence*. The revival of canoeing in some sections, as about New York, has been notable. The decline in racing has been due in part to the full development of the racing canoe, or, as some would have it, its over-development. From the standpoint of the sailing canoeist too much cannot be said in favor of the keen excitement and the attendant danger involved in the management of the modern light-sailing canoe, but the real canoeist is, after all, a woodsman and an explorer, and he is most at home, perhaps, when cruising small streams and lakes. In consequence there has now come about an almost complete separation of the two classes. The record of the past two or three years shows an increase in the use of the paddling canoe, and of the open or "Canadian" model. Thus the canoeist is returning to the methods of the first American, or Indian, canoeists. For every-day use, indeed, he much prefers the cruising boat, in which he can stow both himself and his luggage, rather than one in which he must sit on a sliding seat arranged on a four-to-seven footboard extending at right angles over the water.

The twenty-first annual meet of the American Canoe Association was held from August 3 to 17 at the Muskoka lakes, in Canada, the camp site being a historic meeting place of the Huron tribe of Indians. The situation chosen was in one of the most beautiful regions of accessible Canada, and afforded many opportunities for almost ideal cruises. The usual programme was followed of giving up the first week entirely to general cruising and camping, reserving for the second week the various races. These were won as follows: Combined sailing and paddling, decked canoes, G. W. McTaggart, New York Club; trophy sailing, C. E. Archbald's Mab II., Royal Canadian; war-canoe race, A. C. A. championship, by Toronto Canoe Club team; open-canoe sailing, C. E. Archbald's Mab III.; combined sailing and paddling, open canoes, T. C. Bloomfield, Hamilton, Ontario; Atlantic division cup, F. C. Moore's Pioneer II., New York Club; paddling trophy, R. R. Woods, Toronto Club; open canoe, single blade, paddling, E. J. Ninett, Toronto Club; tandem paddling, single blades, open canoes, T. C. Bloomfield and E. J. Ninett; novice paddling, P. J. Syms, Toronto Club; paddling fours, E. R. Neil, W. R. Percival, L. Turcotte, and D. J. Lynch; Dolphin sailing trophy, G. W. McTaggart's Az Iz, New York Club; combined tandem, single blades, A. McNichol and Miss Allen; relay race, open canoes, single blades, teams of three; course, each man half-mile, E. McNichol, R. N. Brown, and A. McNichol, Toronto Club; Cockburn trophy for war canoes, A. C. A. crew; paddling, decked or open canoes, single, with double blades, H. C. Allen, Park Island C. A.; rescue race, open canoes, E. and A. McNichol, Toronto Club; hurry-scurry, A. L. Lynch, Britannia Club. There were no entries for the Central, Eastern, or Northern division cups, nor for the ladies' tandem paddling, novice sailing, or cruising canoe events. The greatest interest was taken in the paddling events, a large number of excellent paddlers being present, mostly from the Toronto Canoe Club.

CANTON. See CHINESE EMPIRE (paragraph on Cities).

CAPE COLONY, officially Cape of Good Hope Colony, the southernmost of the British possessions in Africa, borders the Atlantic and Indian oceans on the west and south respectively, and on the north is bounded by German Southwest Africa,

the Bechuanaland Protectorate, the Orange River Colony, and Natal, while on the east it touches these last two and the Transvaal Colony. The capital is Cape Town.

Area, Population, and Education.—In 1875 the estimated area of Cape Colony was 191,416 square miles; since then Griqualand West, comprising 15,197 square miles, and the colony of Bechuanaland, comprising 51,424 square miles, have been incorporated with the colony. Cape Colony has the following dependencies: East Griqualand, 7594 square miles; Tembuland, 4122 square miles; Transkei, 2552 square miles; Pondoland, 4040 square miles; and Walfisch Bay, 430 square miles. Accordingly, the total area may be placed at 276,775 square miles. According to the census of 1891, the population of the entire colony was 1,527,224 (of whom 376,987 were whites, exclusive of Pondoland and Bechuanaland, which have about 200,000 and 75,000 inhabitants respectively. About three-fifths of the white population are of Dutch origin. The principal towns, with their populations in 1891, are: Cape Town, 51,251 (including the suburbs, 83,718); Kimberley, 28,718 (35,000 in 1899); Port Elizabeth, 23,266; Graham's Town, 10,498; Beaconsfield, 10,478; Paarl, 7668; King William's Town, 7226; East London, 6924; Graaf-Reinet, 5946; Worcester, 5404. The strongest religious denomination is the Dutch Reformed, others in the order of their numerical importance being Anglican, Wesleyans, and other Methodists, Independents, Presbyterians, Lutherans, Roman Catholics, and Moravians. Education is not compulsory. In 1899 there were reported 2450 schools, with an attendance of about 106,000 pupils; the public expenditure for education was £270,758. There are seven colleges receiving government aid, with a total enrolment of about 560 students. There are about 90 periodicals and newspapers published in the colony.

Government and Finance.—The constitution, which dates from 1872, places the executive authority with a governor (Sir Alfred Milner from 1897 to the end of 1900), who is appointed by the crown and is assisted by a cabinet of six ministers responsible to the legislature. The legislative power is vested in a legislative council of 23 members, elected for seven years, and a legislative assembly of 95 members, elected for five years. There is a small property qualification for suffrage. The law of Cape Colony is based on the Roman-Dutch system. There are local justices, inferior and periodical courts, regular circuit courts, and a supreme court, consisting of a chief justice and eight puisne justices. The imperial government regularly maintains a contingent in Cape Colony and a squadron in South African waters.

Revenue accrues largely from taxation. In 1899 an income tax was instituted. Two of the largest items of expenditure are railways and interest on the public debt. Revenue and expenditure have been as follows for fiscal years:

	1896.	1897.	1898.	1899.
Revenue.....	£6,803,802	£7,389,066	£7,212,225	£8,781,212
Expenditure.....	6,360,404	8,637,854	8,431,398	8,190,124

Nearly the whole of the public debt—amounting in 1900 to £31,409,755—has been contracted for public works, about £20,930,000 having been expended on railways.

Industries.—The principal industries are agriculture, mining, and the rearing of sheep, cattle, and ostriches. Farming and cattle raising are carried on largely by the Dutch, while mining and other industries are for the most part in the hands of the English. The approximate yield of the principal crops in the year 1897-98 was as follows: Maize, 2,061,000 bushels; wheat, 1,951,000 bushels; oats, 1,447,000 bushels; Kaffir corn, 1,141,000 bushels; rye, 288,000 bushels; tobacco, 3,934,000 pounds. From the vine 4,861,000 gallons of wine, 1,387,000 gallons of brandy, and 2,578,000 pounds of raisins were produced. A considerable amount of fruit is raised, including the apple, pear, peach, apricot, plum, fig, lemon, and orange.

On the large grazing farms in 1898 there were 12,617,000 sheep, 5,317,000 Angora and other goats, 1,202,000 cattle, 383,000 horses, 268,000 ostriches, and 239,000 swine. The products included 31,141,000 pounds of wool, 8,115,000 pounds of mohair, 2,623,000 pounds of butter, and 294,700 pounds of ostrich feathers.

The principal minerals worked in Cape Colony are gold, diamonds, copper, and coal; but there also occur manganese, lead, iron, and zincblende. The coal output in 1898 amounted to 208,655 tons. The diamond mines are chiefly at Kimberley, in Griqualand West, 647 miles by rail from Cape Town; and the value of the diamonds produced in 1898 has been reported at over \$20,088,000. Before the outbreak of the Anglo-Boer War in 1899 it was stated that Cape Colony diamonds constituted about 98 per cent. of the world's supply.

Commerce.—The total imports and exports, including specie, have been as follows for fiscal years:

	1895.	1896.	1897.	1898.	1899.
Imports.....	£19,094,880	£18,771,371	£17,997,789	£16,682,438	£19,207,549
Exports.....	16,904,756	16,970,168	21,660,210	25,318,701	23,330,600

In the fiscal year 1898 the imports and exports, exclusive of specie, were £16,621,354 and £24,423,413 respectively; in 1899, £15,370,971 and £23,247,258 respectively. In 1898 the leading exports were valued as follows: Raw gold, £15,394,442 (the gold comes chiefly from the Transvaal, but is not included in the Cape Colony imports); diamonds, £4,566,897; wool, £1,766,740; ostrich feathers, £748,565; Angora hair, £647,548; hides, £548,478; copper ore, £262,830. The colony is far from being able to meet its own food demand; and, hence, wheat, largely from the United States, and other foodstuffs constitute one of the chief imports; other important commodities received from abroad are cotton and woollen goods, machinery, iron and steel wares, leather, coal, and spirits. The distribution of trade may be seen from the following figures for 1898: Imports from Great Britain, £11,443,178; from British possessions, £1,048,126; from foreign countries, £4,130,050. Exports to Great Britain, £23,969,425; to British possessions, £113,080; to foreign countries, £340,908. Shipping entered at the ports in 1898, in addition to the coastwise vessels, comprised 1045 vessels of 2,812,966 tons, and cleared 1065 vessels of 2,789,987 tons; about six-sevenths of this tonnage was British. The coastwise shipping amounted to 3,897,088 tons in 1288 vessels entered, and 3,927,311 tons in 1293 vessels cleared.

The English *Board of Trade Journal* published in December, 1900, statistics of the commerce of Cape Colony for the first nine months of 1899 and for the corresponding months of 1900. By the comparison the effects of the war may be seen. During the first three-quarters of 1899 the total imports amounted to £13,831,000; for the same period in 1900, £14,114,000. In the latter year there was a great increase in the importation of provisions, including grain, flour, etc., leather goods, and specie; but there was a great decrease in machinery and metal goods of all kinds, while a falling off was very noticeable in linens, woollens, wearing apparel, millinery, and haberdashery. It may be seen that the importations largely represent necessities for immediate consumption. The disastrous commercial effects of the war, however, are far more clearly shown by the statistics for exports. The total exports (including specie) for the first nine months of 1899 amounted to £21,256,000; for the first nine months of 1900, £5,280,000. The figures for the principal exports during these periods of the two years respectively were as follows: Raw gold, £13,803,000 and £214,000; diamonds, £3,807,000 and £1,971,000; wool, £1,316,000 and £571,000; Angora hair, £550,000 and £336,000; hides and skins, £303,000 and £257,000. Two important exports increased in value—ostrich feathers from £642,000 in the nine months of 1899 to £658,000 in the same period of 1900, and specie from £73,000 to £300,000.

Communications.—In Cape Colony proper there are over 8000 miles of roads. In 1900 the aggregate length of railways in the entire colony was 2867 miles. Of this amount, 1990 miles were owned and operated by the government, 653 miles, though under private ownership, were worked by the government, and 224 miles were privately owned and operated. About 289 miles were under construction by private companies. The government railways have been built at a cost of nearly £10,200 a mile. In 1898 the gross earnings were £2,954,000, and the expenses, £2,012,400. (For an account of the Cape-to-Cairo Railway and telegraph scheme, see the following article.) The telegraph lines, which are owned by the government, are reported to aggregate 7360 miles, carrying over 22,000 miles of wire. The net revenue in 1898 was £10,571. At the end of 1898 the post-offices in the colony numbered 942; the postal system in that year was worked at a loss of £1496.

History in 1900.—An account of the military movements in Cape Colony during the year may be found in the article TRANSVAAL. A *résumé* of the relations of the Cape political parties may serve to make clearer the political situation in 1900. Before the Jameson Raid at the end of December, 1895, there were three parties—the supporters of the ministry, the opposition, and the Africander Bond. The Bond, composed chiefly of Dutch, whose aims were quite different from those of the ministerial party of Mr. Cecil Rhodes, had, nevertheless, rendered the latter important assistance in the carrying out of his plans for the opening up and development of Rhodesia. After the raid, however, Africander friendliness with the ministerial, or Progressive, party ceased. The personnel of the parties underwent some change; and, finally, the political groups were: The Progressives, led by Sir J. Gordon Sprigg, and representing the extension of British influence; the Africander Bond, constituting the main part of the opposition and having strong Dutch sympathies; and the Independents, led by Mr. J. Rose-Innes, a conservative party, but loyal to British supremacy. The Independent party had little influence, and virtually disappeared. In October, 1898, the ministry of Sir Gordon Sprigg resigned upon a vote of want of confidence, moved by Mr. W. P. Schreiner, the Africander leader, who subsequently became premier and remained as such till June 11, 1900.

The most important political question during 1900 was the Treason bill, which was called forth by the disaffection of many of the Cape Dutch. General Lord Roberts's proclamation of martial law in the colony early in April thoroughly embittered the Dutch and helped to alienate the premier, Mr. Schreiner, from the Africander Bond.

The leaders of this party were active in their opposition to the annexation of the Boer republics and to the punishment of the Cape rebels. The fact that Mr. Schreiner represented the Dutch element in the colony, and at the same time was determined to remain loyal to the imperial government, made his position very difficult. He approved the validity of the declaration making the case of the Cape rebels one in which the law might properly take its course; but, nevertheless, asked amnesty for all, except the leaders. To this petition the imperial government would not accede, but later the foreign office virtually agreed to the proposition of Mr. Solomon, the Africander attorney-general—namely, that the rebellious Dutch should be disfranchised for a term of five years. The two main points of defence presented for their action by the Dutch were compulsion by the Boer commandos and ignorance of the treasonable nature of their acts. In regard to the first point, it was shown that in some cases the Free State commandos had crossed the Orange River at the invitation of Cape Dutch officials, and that in all cases there was no impressment of Cape Dutch into Boer commandos until after opportunity for leaving the district had been given. Concerning the second point, it seemed by no means illogical or unfair to curtail for a few years the franchises of men who while entering upon unquestionable rebellion did not recognize it as such. Although the proposition of the five-year disfranchisement in its practical working out would amount almost to complete amnesty for the rebels themselves, it would be a real and serious blow to the Africander party, which, it was alleged, was in no small degree responsible for the Dutch disaffection. Many instances of unjust imprisonment by the British military were reported; but although these cases were lamentable, there was pointed out the impossibility of making no errors when the number of necessary arrests were so numerous. And, furthermore, the fact that large numbers of suspects, who, the British authorities were morally certain, had been concerned in the disaffection, were placed under arrest received but comparatively little notice.

The conservative and loyal course of Mr. Schreiner caused him to be regarded by his fellow Africanders as a traitor to the party, of whose representatives in the assembly he lost the support of all but nine, while three of his own ministers, Messrs. Sauer, Merriman, and Te Water, were bitterly opposed to his policy. The Africanders believed he was willingly a catspaw to Sir Alfred Milner and Mr. Chamberlain. By reason of these difficulties he resigned with his cabinet on June 11. The question thus presented to the governor of forming a new ministry was difficult. In the approaching session of Parliament the Africander Bond, even after deducting those of its representatives who were under arrest for sedition or who had escaped from the colony, would have a majority of five. Nevertheless, one of two choices had to be made—either a Progressive or a coalition ministry. The latter was at first the more favorably regarded, but the selection of premier for such a ministry was limited to two or three men, notably Mr. Schreiner and Mr. J. Rose-Innes, leader of the Cape bar. But the unpopularity of Mr. Schreiner with the Bond, the difficulty of his assuming immediately amicable relations with his old political enemies, and the reluctance of the Progressive leaders to serve under him rendered unwise the selection of the former premier. Mr. Rose-Innes has a reputation for moderation and political integrity; but his conservatism is so marked and his unwillingness to support any policy any detail of which he does not approve so constant that the Cape politicians did not consider him a practicable candidate. A further attempt at coalition was made, the cabinet to include under Sir J. Gordon Sprigg not only Mr. Rose-Innes, but Mr. Solomon, the former Africander attorney-general. This arrangement failed, however, when it was realized that by it Mr. Schreiner would be left with no able assistant to combat the antagonistic members of the Bond. Accordingly, and since, moreover, Sir J. Gordon Sprigg regarded himself as the logical choice for premier, there was formed on June 18 a moderate Progressive cabinet, having the following composition: Sir J. Gordon Sprigg, premier (for the fourth time) and treasurer; Mr. T. L. Graham, colonial secretary; Dr. Smartt, minister of public works; Sir Pieter Faure, minister of agriculture; and Mr. J. Frost, minister without portfolio. It was expected that Mr. Schreiner would support the new ministry, which, it was believed, intended to pursue the same loyal, moderate, and conciliatory policy that had been advocated by the ex-premier. That the ministry would have a majority, unless Schreiner's followers should desert *en masse*, there was little doubt.

On July 20, 1900, the Cape Parliament was opened by the governor, Sir Alfred Milner, who reported that the colony had contributed 24,000 men to the British forces in the Anglo-Boer War. The government introduced the much-discussed Treason bill, which after long and heated debates was finally passed, with the support of Mr. Schreiner and his few adherents, on September 21, and was subsequently approved by the governor. In the discussions preceding this enactment Mr. Rose-Innes, one of the ablest debaters in the Cape Parliament, said that while he could not sanction amnesty for the rebels, he deprecated any policy of vengeance; and

Mr. Merriman, one of the Afriander extremists, reiterated the plea that the rebels had joined the Boer invading forces because British protection had been withdrawn, and he held that the bill would continue fatal unrest in South Africa. The bill as finally enacted provided for a special court to try rebel leaders and other courts to try the rank and file, who, if found guilty, should be disfranchised for five years; it also provided for commissioners to assess losses caused by the war and the amount of compensation to be paid. The special court appointed was composed of Mr. Justice Solomon as president, Mr. Justice Lange, and Advocate Maasdorp. The number of rebels affected by the Treason bill was estimated at from 9000 to 10,000. Mr. Schreiner's support of the bill was rendered more effective by the unsettled question of leadership among the Bond extremists, as none of the most prominent leaders—Sauer, Merriman, Te Water, or De Waal—had sufficient support; though late in the summer there were indications that Schreiner was beginning to recover his influence over the moderate section of the Bond, the violent opposition of the extremists forced him to resign his seat in the Cape Assembly on October 24. On October 13 Sir Alfred Milner prorogued the Parliament until January 4, 1901. About the same time he issued a notice that all able-bodied British refugees were liable to military service in the districts to which they were returning, and advised those unwilling so to serve to defer their return.

A people's congress in the interest of the Afriander cause assembled at Worcester, Cape Colony, on December 6, 1900. By refusing to allow special trains to Worcester the government incurred the displeasure of the promoters of the congress, who were further enraged by the posting of troops and artillery on the hills commanding the place of meeting. The assembly numbered between 8000 and 10,000 people. Though a number of violently worded speeches were made, no violence was attempted or advised. The congress adopted resolutions deprecating the war, and particularly its alleged uncivilized character, demanding the retention of independence by the two Boer republics, asking that the right of the people to manage the internal affairs of Cape Colony be recognized, and censuring the high commissioner, Sir Alfred Milner, for his policy of interference. Among the principal speakers was Mr. Cronwright-Schreiner. On December 11 a deputation presented the resolutions to Sir Alfred Milner, who was requested to bring them to the notice of the imperial government. To this the high commissioner acceded, but pointed out that there was no reasonable chance of a reversal of the imperial policy of annexation—a policy approved by a great majority of the nation and by all the great colonies of the empire, excepting Cape Colony; "and," he added, "it is approved here by half the white population and all the natives." In December there was still fear of further disaffection of some of the Cape Dutch, and Mr. Merriman and Mr. Sauer hinted at impending trouble from Afrianders in the colony. See COLONIES.

CAPE-TO-CAIRO RAILWAY. The plan of Mr. Cecil Rhodes, known as the Cape-to-Cairo Railway scheme, whereby rail communication is to be established between northern and southern Africa, progressed in 1900, though the course of a large part of the road is still a matter of conjecture.

The first railway in South Africa was completed in 1859, when Cape Town was connected by rail with Wellington, 58 miles distant. In 1872 the line was extended some 60 miles to Worcester. Subsequent to 1874 railway construction progressed rapidly. In November, 1885, the first train from Cape Town reached Kimberley, 647 miles distant, and 5 years later the line over the 127 miles from the latter town to Vryburg was completed. For three years Vryburg—774 miles from Cape Town—remained the northern terminus of the Cape system. In 1893 a company was formed for continuing the line, by way of Mafeking, north to the Zambesi. Trains were running to Mafeking—90 miles beyond Vryburg—in October, 1894; to Gaborone—110 miles beyond Mafeking—in July, 1895; and to Bulawayo, in Matabeleland, or eastern Rhodesia—1360 miles from Cape Town—in November, 1897.

From 1897 to 1900 the northern portion of the road was extended, as a part of the operations of the Egyptian field force under General Kitchener, as far south as Khartoum, the first train from Wady Halfa reaching this place, 1331 miles from Cairo, on January 26, 1900. The distances stated between Bulawayo and Khartoum are little better than careful guesses, but the total length of the road when completed has been estimated at 5850 miles. Accordingly, by subtracting from this the 1331 miles to Khartoum and the 1360 miles to Bulawayo, it appears that over half the line, or about 3169 miles, remains to be constructed.

The suggestion has been made, however, and probably will be acted upon, that the line be made to touch at the northern and southern extremities of several of the great African lakes, and that, pending its completion, these be navigated. Supposing that this plan will be adopted, the first through communication, starting from Bulawayo, will be made as follows: By rail to the southern end of Lake Nyassa, about 650 miles; by water over Lake Nyassa, 310 miles; by rail to Abercorn, at the southern end of Lake Tanganyika, 180 miles; by water over Lake

Tanganyika, 400 miles; by rail to the Albert Nyanza, 310 miles (part of this may be by water over Lake Kivu and the Albert Edward Nyanza); by water over Albert Nyanza and the upper part of the Nile as far as Dufli, about 185 miles; by rail past the cataracts of the White Nile to Lado, about 125 miles; by water down the Nile to Khartoum, about 1000 miles. It may be seen that the waterways here enumerated amount to 1895 miles, leaving only 1265 miles of railway to be built before through communication can be effected. It is not unlikely, however, that before the railroads connecting the lakes are all completed, the line will be pushed through from Khartoum to Lado, possibly clear to the Albert Nyanza. The cost of completing the line, exclusive of the distances covered by the large navigable waterways, is estimated at from \$100,000,000 to \$125,000,000. More than twice the latter amount will be required if the waterways are not used. The first roads that will tap the trunk line will probably be an extension of the road from Beira through Portuguese East Africa and Matabeleland to Buluwayo; a road from Berber on the Nile to Suakim on the Red Sea; a road, already in process of construction, through southern British East Africa from Mombasa to the Uganda region; and a road through German East Africa from the vicinity of Zanzibar to Tabora, on Lake Tanganyika. Though retarded by the Anglo-Boer War railway construction from Buluwayo made some progress during 1900, and financial guarantees for the extension of the road as far as Lake Tanganyika have been secured. In June, 1900, earthworks for the line, running northeast from Buluwayo, were completed as far as Gwelo, in the Rhodesian gold region. Branch lines are being extended from Buluwayo southeast to the Gwanda gold fields and northwest to the Wankie district. The Portuguese railway, running from Beira, on the Indian Ocean, 222 miles to the frontier at Umtali, was extended in 1899 158 miles to Salisbury, the first train entering that town on May 1, 1899. On July 8, 1900, the widening of the gauge of this railway to 3 feet 6 inches—the standard gauge of South Africa and Egypt—was completed. From Salisbury this line is being extended to Buluwayo, and it was hoped that about 100 miles would be completed by the beginning of 1901; by the completion of this line rail communication will be established between Beira and Cape Town, and rich gold fields will be opened to both ports.

In the spring of 1899 Mr. Rhodes made an unsuccessful attempt to get financial aid from the British government to insure the extension of the railway from Buluwayo to Lake Tanganyika. He finally, however, obtained the loans—£500,000 from the Rhodesian mining companies, and £3,000,000, to be paid in five equal annual instalments—from the British South Africa Company. About one-seventh of the line must pass through foreign territory—either the Congo Free State or German East Africa. Mr. Rhodes, it is said, secured a concession from the Belgian authorities of the Free State, but he preferred the other route, and in November, 1899, obtained the consent of the German government for his road to pass through its territory. But this consent was given on conditions—viz., that the railway—and also the telegraph—be constructed by German capital; that no railways be built from Rhodesia and Bechuanaland to the Atlantic coast south of the fourteenth degree of latitude except from a point on the frontier of German Southwest Africa, to be determined by special agreement with the German government; and that no such railway be constructed north of the fourteenth parallel until a line had been built south of that latitude through German Southwest Africa. It would seem that Germany is to be well rewarded for her concession.

Although the plan for this great African railway seems to meet the approval of the British public, who generally regard it as an assured success, yet it has its adverse critics. The year 1909 has been predicted as the time of its completion; Sir Henry Stanley believes "it will be an accomplished fact before 1925;" Colonel H. G. Prout, another authority on Africa, not only regards Stanley's estimate as too sanguine, but does not believe that Mr. Rhodes "has any notion of building a continuous line of railroad from the Cape to Cairo." Colonel Prout holds that the line, even though the waterways were used, could not afford to carry any articles but those whose ratio of value to weight is high; it might transport gold, ivory, diamonds, and ostrich feathers, but never could compete with the steamship in the transportation of staple commodities. The economic conquest of Africa, he said, would not be effected by a transcontinental line running either north and south or east and west, but by relatively short railways running inland from the ports.

A Cape-to-Cairo telegraph, the idea of which preceded that of the railway, is being constructed by the African Transcontinental Telegraph Company. The course, beginning at Umtali, in Mashonaland (which town to the southward is connected with Cape system by way of Salisbury); is: To Tete, then in an easterly direction to Blantyre in British Central Africa, from the latter town to Zomba, thence to Karonga on the western shore of Lake Nyassa, and from Karonga to Abercorn at the southern end of Lake Tanganyika. Thus far in 1900 the line had been constructed. The purpose of its promoters is to carry it northward through German East Africa, by

agreement with the German government, Uganda, and the Eastern Soudan to Khartoum, which is already connected by telegraph, as well as by rail, with Cairo. The authorized capital of the African Transcontinental Telegraph Company is £300,000.

CAPE VERDE ISLANDS, a group of islands situated in the Atlantic Ocean, about 320 miles west of Cape Verde in Africa. They belong to Portugal, and occupy an area of 1490 square miles. The population in 1897 was 141,888, and consists of a mixed race of Portuguese and negroes, the latter element predominating. The chief products of the islands are coffee, sugar, millet, and medicinal produce. The imports for 1898 amounted to \$1,366,596, and the exports to \$331,153. The revenue for the same year amounted to \$311,994, and the expenditures to \$274,128. During 1898 the ports of the islands were visited by 3225 vessels with a tonnage of 3,365,137. The islands are administered by a governor and the seat of the government is at Praia.

CARDINALS. In the Roman Catholic Church the body of cardinals, comprising bishops, priests, and deacons, is called the Sacred College. The cardinals are the electors and advisors of the pope, and second to him only in dignity. The subjoined list gives their names and the dates of consecration:

Cardinal bishops: A. Agliardi (1896); M. Mocenni (1893); L. M. Parocchi (1877); L. O. S. Stephano (1873); S. Vannutelli (1887).

Cardinal priests: A. Capecelatro (1885); G. B. Casali del Drago (1899); S. Casanas (1895); A. M. Cassagares (1895); F. Casetta (1899); P. G. M. Celestia (1884); A. Ciasca (1899); P. H. Coullie (1897); S. Cretoni (1896); A. di Pietro (1893); A. A. Ferrari (1894); D. Ferrata (1896); Francinava di B. (1899); S. Geleati (1890); J. Gibbons (1886); P. L. Goossens (1889); G. M. Gotti (1895); J. Herrera (1897); G. Kopp (1893); G. M. J. Saboure (1897); B. M. Laugenieux (1886); V. L. Lecot (1893); M. Ledochowski (1875); M. Logue (1893); G. A. Masella (1887); F. D. Mathieu (1899); J. Missia (1899); F. P. Moran (1885); A. Perraud (1893); G. Portanova (1899); G. Prisco (1896); M. Rampolla (1887); P. Respighi (1899); F. M. Richard (1889); A. Richelmy (1899); C. M. Sancha (1894); G. Sarto (1893); F. Satolli (1895); L. Schlauch (1893); D. Svampa (1894); V. Vannutelli (1889); H. Vaughn (1893); C. Vaszary (1893).

Cardinal deacons: L. Macchi (1889); R. Pierotti (1896); F. Segna (1894); A. Steinhuber (1893); G. C. Vives y Tuto (1899).

CARLETON, General HENRY ALEXANDER, C.B., died at Bath February 22, 1900. Born in 1814, he entered the army in India in 1830 and served through the mutiny. He held a command at the siege and capture of Lucknow in 1858 and was decorated for his services.

CARNEGIE, ANDREW, manufacturer and latterly philanthropist, was born at Dunfermline, Scotland, November 25, 1837. The family came to the United States in 1848 and settled at Pittsburgh, where Andrew started his business life in 1849 by attending a stationary engine. Later he became successively a telegraph messenger, an operator, manager of telegraph lines in the Pittsburgh office of the Pennsylvania Railroad, and superintendent of the Pittsburgh division of the Pennsylvania. By association with others in developing the possibilities of the sleeping car, and by investments in oil wells, Mr. Carnegie gained the capital requisite to establish him in the steel and iron business. Under Mr. Carnegie's management this business increased until it produced more iron, steel, and coke than any other private enterprise in the world. Some details concerning the size and valuation of the company were disclosed in a suit at equity brought on February 13 by Henry Clay Frick, formerly chairman of the Carnegie Steel Company, against the Carnegie Steel Company and the stockholders thereof, to restrain Mr. Carnegie from forcing Mr. Frick out of the company unless he was given adequate compensation for his stock holdings. It was stated that the Carnegie Company owned, among others, the Homestead Steel Works, the Edgar Thomson Steel Works, and the Duquesne Steel Works, and that each of these concerns controlled minor works. One-fourth of all the ore territory in the northwest and Lake Superior region was also said to be owned by the Carnegie Company. The Consolidated Carnegie Company, incorporated in 1892, was capitalized at \$25,000,000, but the net profits for 1899 alone were \$21,000,000, and the estimated profits for 1900 were \$40,000,000. "Mr. Carnegie valued the entire property at over \$250,000,000, and avowed his ability in ordinarily prosperous times to sell the property on the London market for \$500,000,000." At the beginning of 1899 Mr. Carnegie offered to sell his interest of 58½ per cent. in the company for \$157,950,000, and on the same basis Mr. Frick demanded that if he were forced out of the company he should receive for his 6 per cent. holdings \$16,237,000. The possibility of this "freeze-out" lay in the fact that a signed resignation was required to be handed to the company by each new member thereof, to become operative when affirmatively voted upon by members representing a majority of the stock. Now, Mr. Carnegie himself held a majority of the stock, and he voted that Mr. Frick's resignation be accepted, and that his holdings be bought for

\$6,000,000. The suit which Mr. Frick brought to prevent this disposition of his property did not, however, come to trial, as Mr. Carnegie compromised in Mr. Frick's favor. On March 24 a new company was incorporated at Trenton, N. J., with a capital stock of \$160,000,000, divided into shares of \$1000 each. Of these shares Mr. Frick received 15,484, and his holdings would thus be \$15,484,000. Toward the close of the year it was said that plans engineered by the great structural steel interests were being considered for buying Mr. Carnegie out. It was felt that his influence in the steel business was so great that it was unsafe to independent companies for him to remain longer concerned. It was also stated that Mr. Carnegie himself was desirous of being bought out, and that until he was he was likely to endeavor to make trouble for the independent steel companies, so as to force them to an issue.

CARNEGIE MUSEUM, PITTSBURG. See ANTHROPOLOGY IN AMERICA.

CAROLINE ISLANDS, a group of islands in the Pacific Ocean, situated between the Philippines and Marshall Islands and north of New Guinea. They number 526, and their total area is estimated at 800 square miles. Their population, according to the latest information, is 42,700, of which about 800 are Europeans. According to the treaty signed by Germany and Spain in February, 1899, and formally announced in June of the same year, the Carolines, together with the Pelews and Ladrões or Marianne Islands, except Guam (*q.v.*), were sold to Germany for the sum of 25,000,000 pesetas (\$4,825,000), and they are now regarded as a part of the German New Guinea Protectorate. The more important groups, of which there are 26, are the Pelews or Palaos, Yap, Uluthi, Uleai, Namonuito, Rug or Hugoleu (15,000 inhabitants), Mortlocks, Ponapé (215 square miles, 4000 inhabitants), and Kusaie (45 square miles, 500 inhabitants). The soil is not very fertile. The principal articles of export is copra, and some of the islands export also pearl shells in small quantities. The trade is mostly in the hands of the German Jaluit Company, which has trading stations on every important island. Several English, Japanese, and Chinese houses are also represented. The inhabitants of the islands are Micronesians, and most of them converted to Christianity mainly by the efforts of American missionaries, who have stations on many of the islands. The revenue of the new colony has been insignificant so far, and the amount of expenditures made by the German government on the new possessions was 465,000 marks in 1899, and 370,000 marks for 1900-01. Since the German occupation the purchase of land by Europeans from the natives has been prohibited.

CARPENTER, FRANCIS BICKNELL, portrait painter, died in New York May 23, 1900. He was born in Homer, N. Y., in 1830, and in 1851, after having had but six months' instruction in painting, came to New York and opened a studio. In the following year he was elected an associate member of the National Academy. He became well known through his portraits of many prominent men. His most important picture is "President Lincoln Signing the Emancipation Proclamation," which was purchased by Mrs. Elizabeth Thompson (died July, 1898), for \$25,000 and presented to Congress in 1877, and now hangs in the east wing of the House of Representatives. Among his other well-known works are the portraits of Abraham Lincoln (now in the capitol at Albany), President Fillmore and Governor Myron H. Clark (now in the City Hall, New York), James Russell Lowell, Horace Greeley, Ezra Cornell, George William Curtis, President Tyler, Richard S. Storrs, Schuyler Colfax, Henry Ward Beecher, President Pierce, Edwin M. Stanton, Lyman Beecher, and John C. Fremont. Carpenter wrote *Six Months in the White House with Abraham Lincoln*.

CARS. See RAILWAYS (paragraph Cars).

CARTER, Sir FREDERICK BOWKER TERRINGTON, K.C.M.G., chief justice and premier of Newfoundland, died February 28, 1900, at the age of 81 years. He was educated at St. John's, and was called to the bar of Newfoundland in 1842. From 1855 to 1878 he was a member of the legislature and speaker in 1861-65. From the latter year to 1870 and from 1874 to 1878 he was premier and attorney-general. He was appointed to the supreme bench in 1878, and two years later was made chief justice. He is said to have been the first colonial statesman knighted by Queen Victoria.

CASCADE TUNNEL. See TUNNELS.

CATHOLIC COLLEGES OF THE UNITED STATES, CONFERENCE OF THE. The second annual conference was held in Chicago April 18-19, 1900, 52 delegates representing 72 colleges, 3 of the delegates being from Canadian institutions. These conferences owe their origin to the desire for unification among Catholic collegiate institutions, and aim to bring together representatives of the different systems, as represented by Jesuit, Benedictine, Franciscan, Augustinian, Holy Cross, Lazarist and other religious orders, and by diocesan colleges. The

paper of most general interest at the 1900 convention dealt with *The Relative Merits of Courses for the Baccalaureate in Catholic and non-Catholic Colleges*, and was intended to discuss the issue raised by Harvard as to the value of the courses at Boston College. President, Right Rev. Mgr. Conaty; secretary, Rev. John A. Conway, S.J. See UNIVERSITIES AND COLLEGES.

CATHOLIC SUMMER SCHOOL OF AMERICA, on Lake Champlain, near Plattsburg, N. Y., grew out of the Catholic Educational Union, formed in 1880, which with its reading circles following defined courses of study under the direction of a central body, and a magazine, was modelled in the Chautauqua system (*q.v.*). The first summer school was held at New London, Conn., in 1892. In 1893 it was permanently located on a property of 450 acres, now called Cliff Haven, becoming incorporated the same year. The primary import of the summer school is to give the Catholic point of view on issues of the day in history, literature, philosophy, politics, economics, science, religion, etc., and to afford means for social intercourse and recreation. The school and camp of 1900 was held from July 2 to August 31. The regular and special courses were supplemented by over 140 lectures by well-known Catholics and others. Improvements in building and road-making were undertaken during the year; a pier 350 feet long was being built for the accommodation of large lake steamers, and arrangements were completed for an addition to the building of the Champlain Club. Other buildings were being arranged for by the Buffalo Cottage Association; the Sisters of St. Joseph, who are to erect a Mother-house and academy; and the corporation, who will enlarge the chapel. The 1901 session will open July 1 and continue for nine weeks. President, Rev. M. J. Lavelle, LL.D., New York; secretary, Warren E. Mosher, 542 Fifth Avenue, New York; official organ, *Mosher's Magazine*.

CATHOLIC UNIVERSITY, Washington, D. C. In the course of the year ending September 1, 1900, the endowment fund was increased by \$37,241.70, and new equipment in books, apparatus, etc., to the value of \$4679.49, was added to the already existing equipment. Promises were secured for three foundations of \$50,000 each, to establish three chairs before the end of the present financial year. The student attendance during the academic year, omitting repeated names, was 176, as follows: School of sacred sciences, 75; philosophy, 22; letters, 15; physical sciences, 7; social sciences, 4; law, 47; technology, 10. The faculty numbered 33. Among these were graduates from 49 colleges and universities. Most of these students were candidates for the doctorate in theology, philosophy, law, or science; or for the licentiate in theology, or master in philosophy, law, or science; or for the degrees civil, electrical, or mechanical engineer. The university is one of the fourteen members of the Association of American Universities, founded February, 1899. The colleges affiliated to the university have made material advancement since the last report. The order of Friars Minor have completed the erection of a college and church, "The College and Commissariat of the Holy Land," on their extensive site in Brookland. The college has already several teachers, and a considerable body of students. The congregation of the Holy Cross, which established Holy Cross College a few years since in a mansion leased in Brookland, has erected the central part of its main college building, situated on a tract of land immediately north of the university grounds, and now occupies it. The Marists, who have occupied a large building of their own in Brookland during the past five years, have just completed the Marist College, a large and massive building, located on a tract also just north of the University. The Fathers of the congregation of St. Paul the Apostle have made a considerable addition to the St. Thomas College building. The university library numbers 31,686 volumes. The total income from all sources for the year was \$115,248.

CAUCASUS. See RUSSIA.

CAVAN, Ninth Earl of, FREDERICK EDWARD GOULD LAMBART, died in Hertfordshire, England, July 14, 1900. Born in 1839, he was educated at Harrow, and as a lieutenant in the British navy was present at the siege of Sebastopol in 1854, and at the bombardment of Canton in 1856. He was a Liberal member of the House of Commons from 1885 to 1892. He succeeded to the earldom in 1887. Lord Cavan was the author of *With Yacht, Camera, and Cycle in the Mediterranean*, and *With Yacht and Camera in Eastern Waters*.

CELEBES, an island of the Dutch East Indies (*q.v.*), with an area of 72,000 square miles, and an estimated population of 2,000,000. Only a part of the island, constituting the residency of Menado (22,080 square miles, population 549,138), is under the immediate control of the Dutch government, the rest being administered by native chiefs under the guidance of Dutch officials. As a result of the recent discovery of gold on the island, a careful investigation of its geological formation has been made, which shows the northeastern part of the island, known as Minahasa,

to be entirely of volcanic formation, with a few active volcanoes, some of them over 6000 feet high. Gold is found mainly along the streams, but not in sufficient quantities to attract foreign capital. Besides gold there are also found deposits of copper, zinc, lead, and coal, the latter mainly in the southern part of the island.

CEMENT, HYDRAULIC. The activity in building and engineering construction during 1899 was reflected in an increased production of Portland cement in the United States. Another effect of this activity was to enlist a large amount of capital in the building of new cement plants, and in the improvement and enlargement of existing works. Most of these factories began operations in 1900, and consequently served to swell the year's production of Portland cement above even the high figures of 1899. On the other hand, the output of natural rock cement suffered a decrease, owing very largely to the increased production of the artificial material. For many years the United States has led the world in the manufacture of natural rock cement, and it continued to do so during 1900. A more important reason for congratulation, however, lies in the marvellous growth of the Portland cement industry during the last decade, by which the United States is placed high up in the list of the cement-producing nations of the world, ranking now on at least an equality with England, and being surpassed only by Germany. According to the statistics of Portland cement production in the United States, published by the *Engineering and Mining Journal* in its annual review of mineral and metal production in 1900, the total output was 8,503,308.

According to the same authority, the production of natural rock cement in the United States during 1900 was 8,832,240 barrels, and the production of slag cement was 493,150 barrels.

CENSUS. The twelfth census of the United States was taken last June, according to the prearranged plan of the Census Office. So far the office has published the figures of the total population of the country by States, together with the more detailed statistics by States and counties for some of the States. The statistics of agriculture, manufactures and other subjects remain as yet to be published. The count of the country's population reveals an increase for the last ten years of a little over 13,000,000 people, or about 2.1 per cent. annual increase. This is a slower rate than the one observed in the preceding decade, when it was 2½ per cent. per year; the diminished rate is largely due to a falling off in immigration numbers. The total population of the country is now 76,304,799, of which 74,611,005 are in the forty-five States of the Union, and the remaining 1,693,794 in the Territories of the United States, not including any of the West Indies or Philippine possessions. The figures of the twelfth census are of special significance, showing a turning point in the development of the country, since, for the first time in the history of this century, the Eastern States record a greater increase of population than those in the West. The centre of population has shifted but a few miles westward from where it was in 1890, and is nearly in the centre of the southern part of the State of Indiana. The great impetus for the westward movement of population which was given in the previous decades by the successive openings of new lands has now disappeared and the country has settled down to the normal work of developing existing resources. The great strides this country has made in the past decade in industrial development have further contributed to the more rapid growth of the Eastern States as compared with the Western. Thus New Jersey shows a gain of about 30 per cent., largely due to the growth of the small manufacturing towns in the vicinity of New York. Similarly in New York, the largest gains have occurred around its two largest industrial centres, New York City and Buffalo. The same may be said of Massachusetts and the smaller States of Connecticut and Rhode Island. New York and Pennsylvania continue to lead in population and resources, each having gained over 1,000,000 of population. On the other hand, the States which have been the most backward in industrial growth have remained either stationary so far as population is concerned, or even lost some of it. Such are the States of Maine, New Hampshire, and Vermont, in the East, and Nebraska, Nevada, and Kansas, in the West. The same holds good of the Southern States, showing the greatest increase where recent industrial progress is most noticeable. The following table shows the population by States and Territories in 1890 and 1900:

	1900.	1890.		1900.	1890.
Alabama	1,828,697	1,513,017	Rhode Island	428,556	345,506
Arkansas	1,311,564	1,128,179	South Carolina	1,340,316	1,151,149
California	1,485,053	1,206,130	South Dakota	401,570	328,808
Colorado	539,700	412,198	Tennessee	2,020,616	1,767,518
Connecticut	906,355	746,258	Texas	3,048,710	2,235,523
Delaware	184,735	168,493	Utah	276,749	207,905
Florida	528,542	391,422	Vermont	343,641	332,422



1



2

SCENES AT THE CENSUS BUREAU.—1. Mountains of blank Census documents—Preparing report forms for the enumerators. 2. In the Census Bureau's Building—A row of presses in the printing room.

	1900.	1890.		1900.	1890.
Georgia.....	2,216,331	1,837,353	Virginia.....	1,854,184	1,655,980
Idaho.....	161,773	84,385	Washington.....	518,103	349,390
Illinois.....	4,821,580	3,826,351	West Virginia.....	958,800	762,794
Indiana.....	2,516,462	2,192,404	Wisconsin.....	2,069,042	1,686,880
Iowa.....	2,231,933	1,911,596	Wyoming.....	92,531	60,705
Kansas.....	1,470,496	1,437,096	Total for 45 States.....	74,611,005	62,116,811
Kentucky.....	2,147,174	1,858,635	Alaska.....	63,592	32,052
Louisiana.....	1,381,625	1,118,587	Arizona.....	122,212	59,820
Maine.....	694,466	661,066	District of Columbia.....	278,718	230,392
Maryland.....	1,190,650	1,042,380	Hawaii.....	154,001	89,990
Massachusetts.....	2,805,946	2,298,943	Indian Territory.....	891,960	180,182
Michigan.....	2,420,662	2,068,583	New Mexico.....	195,301	153,593
Minnesota.....	1,751,394	1,301,826	Oklahoma.....	398,331	61,384
Mississippi.....	1,551,370	1,280,600	Persons in the service of the United States station- ed abroad (estimated)	89,670	.....
Missouri.....	3,106,665	2,679,184	Indians, etc., on Indian reservations, except Indian Territory.....	.....	145,282
Montana.....	243,329	132,159	Total for 7 Territories, etc.....	1,693,794	952,945
Nebraska.....	1,068,339	1,058,910	Grand total.....	76,304,799	63,069,756
Nevada.....	42,335	45,761			
New Hampshire.....	411,588	376,530			
New Jersey.....	1,883,669	1,444,933			
New York.....	7,268,013	5,997,853			
North Carolina.....	1,893,810	1,617,947			
North Dakota.....	319,046	182,719			
Ohio.....	4,157,545	3,672,316			
Oregon.....	413,386	313,787			
Pennsylvania.....	6,302,115	5,258,014			

That the industrial centres are responsible for the greater part of the increase of the country's population, and furthermore, that they have served to denude the rest of the country of a great part of its working population, may be seen from the census figures of population of cities having more than 25,000 inhabitants. There were 159 such cities in 1900, with a population of 19,694,625, as against 14,855,489 in 1890, or an increase of 32.5 per cent., whereas the population of the country increased but 20 per cent. The process of concentration may be seen from the following figures: The number of cities with a population of more than 200,000 inhabitants increased from 16 in 1890 to 19 in 1900; of those having from 100,000 to 200,000 there were 12 in 1890 and 19 in 1900; from 50,000 to 100,000, 30 in 1890 and 40 in 1900; from 25,000 to 50,000, 66 in 1890 and 81 in 1900. The following two tables show in detail the increase of population of the cities during the last two decades:

TABLE 1.—POPULATION OF CITIES HAVING 25,000 INHABITANTS OR MORE IN 1900, ACCORDING TO CLASSIFIED SIZES.

CLASSIFIED SIZES.	Number of cities.	POPULATION.			INCREASE FROM 1890 TO 1900.		INCREASE FROM 1880 TO 1890.	
		1900.	1890.	1880.	Number.	Per cent.	Number.	Per cent.
Totals.....	159	19,694,625	14,855,489	9,933,927	4,839,136	32.5	4,921,562	49.5
Cities of 200,000 and over.....	19	11,795,809	8,879,105	6,311,653	2,916,704	32.8	2,567,452	40.6
Cities of 100,000 and under 200,000....	19	2,412,538	1,806,656	1,009,163	608,882	33.3	799,493	79.2
Cities of 50,000 and under 100,000.....	40	2,709,398	2,067,169	1,368,409	642,169	31.0	698,860	51.0
Cities of 25,000 and under 50,000.....	81	2,776,940	2,100,559	1,244,802	676,381	32.2	855,757	68.7

TABLE 2.—POPULATION OF CITIES HAVING 200,000 INHABITANTS OR MORE IN 1900, ACCORDING TO CLASSIFIED SIZES.

CLASSIFIED SIZES.	Number of cities.	POPULATION.			INCREASE FROM 1890 TO 1900.		INCREASE FROM 1880 TO 1890.	
		1900.	1890.	1880.	Number.	Per cent.	Number.	Per cent.
Totals.....	19	11,795,809	8,879,105	6,311,653	2,916,704	32.8	2,567,452	40.6
Cities of 2,000,000 and over.....	1	3,437,302	2,492,591	1,901,345	944,611	37.8	591,248	31.0
Cities of 1,000,000 and under 2,000,000	2	2,992,272	2,148,814	1,350,355	848,458	39.5	798,450	58.9
Cities of 500,000 and under 1,000,000...	3	1,645,067	1,334,686	1,015,870	310,401	23.2	238,016	27.6
Cities of 200,000 and under 400,000....	5	1,724,455	1,351,539	960,767	372,916	27.5	390,772	40.6
Cities of 100,000 and under 200,000....	8	1,996,793	1,553,475	1,053,516	443,318	28.5	499,869	47.4

The following is a list of cities with a population of 100,000 or more:

CITIES.	POPULATION.						INCREASE FROM 1890 TO 1900.	
	1900.		1890.		1880.		Number.	Per cent.
New York, N. Y.	1	3,487,202	1	2,492,591	1	1,901,345	944,611	37.8
Chicago, Ill.	2	1,698,573	2	1,008,850	3	508,135	596,725	54.4
Philadelphia, Penn.	3	1,293,697	3	1,046,964	2	847,170	246,723	23.5
St. Louis, Mo.	4	573,238	4	451,770	5	350,518	122,468	27.3
Boston, Mass.	5	560,892	5	448,477	4	363,839	112,415	25.0
Baltimore, Md.	6	506,067	6	434,439	6	332,313	74,518	17.1
Cleveland, O.	7	381,768	9	261,353	11	160,146	120,415	46.0
Buffalo, N. Y.	8	352,337	10	255,654	13	155,134	96,732	37.8
San Francisco, Cal.	9	342,782	7	298,997	8	232,959	43,785	14.6
Cincinnati, O.	10	325,902	8	296,908	7	255,139	25,994	9.7
Pittsburg, Penn.	11	321,616	12	293,617	13	156,399	82,999	34.7
New Orleans, La.	12	287,104	11	242,089	9	216,090	45,085	18.6
Detroit, Mich.	13	285,704	14	205,876	17	118,340	79,828	38.7
Milwaukee, Wis.	14	285,315	15	204,468	18	115,587	80,847	39.5
Washington, D. C.	15	278,718	13	230,392	10	177,694	48,326	30.9
Newark, N. J.	16	246,070	16	181,830	14	136,506	64,940	35.3
Jersey City, N. J.	17	206,433	18	163,003	16	130,723	43,430	26.6
Louisville, Ky.	18	204,731	19	161,129	15	123,758	43,902	27.0
Minneapolis, Minn.	19	202,718	17	164,783	37	46,687	37,990	23.0
Providence, R. I.	20	175,597	24	132,146	19	104,257	43,451	32.8
Indianapolis, Ind.	21	169,164	26	105,436	23	75,056	63,723	60.4
Kansas City, Mo.	22	163,732	23	132,716	29	55,795	31,088	22.3
St. Paul, Minn.	23	163,065	22	132,156	44	41,473	29,909	22.4
Rochester, N. Y.	24	162,608	21	132,696	21	69,366	28,712	21.4
Denver, Col.	25	133,859	25	106,713	49	36,629	27,146	25.4
Toledo, O.	26	131,822	28	81,434	34	56,137	50,898	61.8
Allegheny, Penn.	27	130,896	27	108,267	23	75,623	24,609	22.8
Columbus, O.	28	125,560	29	85,150	32	51,647	37,410	42.4
Worcester, Mass.	29	118,421	31	84,555	27	58,221	33,766	39.8
Syracuse, N. Y.	30	106,374	30	83,143	31	51,793	30,331	34.9
New Haven, Conn.	31	106,027	34	81,298	25	62,662	26,729	28.8
Paterson, N. J.	32	105,171	35	73,247	33	51,081	26,894	34.2
Fall River, Mass.	33	104,863	39	74,398	36	43,961	30,465	40.9
St. Joseph, Mo.	34	102,979	54	32,324	56	23,431	50,635	96.8
Omaha, Neb.	35	102,565	30	140,453	62	30,518	*37,597	*26.9
Los Angeles, Cal.	36	102,479	56	50,395	135	11,183	52,094	103.3
Memphis, Tenn.	37	102,330	42	64,496	53	33,592	37,825	56.6
Scranton, Penn.	38	102,026	38	73,216	39	45,330	26,511	35.6

* Decrease.

For detailed census returns of population, see Appendix.

The United States is not the only country which has counted the members of its household in 1900. As early as 1897, at the St. Petersburg meeting of the International Statistical Institute, the idea was seriously discussed of taking a simultaneous census in 1900 throughout the world. The matter formed the subject of a special inquiry on the part of the members of the International Institute as to the feasibility of the plan. But the impossibility of changing the dates of census taking in some of the countries, notably Russia, England, Spain, and a few others, frustrated the scheme. Even as it is, however, there will be a number of countries who will have taken their censuses either in 1900 or 1901. Thus, Germany and Portugal took their censuses on December 1, 1900; Italy on December 31, 1900; Austria and Sweden on the same day, and to these should be added Finland and Brazil. In addition to those the following countries will take their censuses in 1901: France, Belgium, Netherlands, England, Canada, Australia, and all the other English colonies. Russia and Spain had their censuses taken in 1897, which is so close to 1900 that, after the results of the census shall have been published by the various countries, we will have quite a comprehensive view of the state of population and the material resources of the civilized world at the opening of the new century. The Italians have already footed up the results, and are proud of their showing. The total population appears to be about 35,000,000, which is more than 4,000,000 in excess of what was expected. The ratio of increase is greater than in any other European country. It is estimated that, in addition, some 5,000,000 Italians have gone to the United States and South American countries. The British census is to

be taken on Sunday, March 31, 1901. Since the questions asked by the British enumerator are limited to the subject of population and vital statistics, the British, as well as most of the European nations, are capable of completing their enumeration within one day, which is much preferable to the American method of extending the inquiry over a period of two weeks or a month, reducing the danger of omission or counting the same people twice to a minimum. The choice of Sunday for the enumeration day is explained, of course, by the fact that it is easier to reach most of the people on that day. The census in Great Britain is to be carried out by the registrar general, under the supervision of the Local Government Board. One of the questions asked in the British census, which will bear on the question of overcrowding among the tenement people, is as to the number of rooms occupied by a person. The registrar general is charged with the preparation of two reports. One, called the preliminary abstract, is to be published within five months after the census day if Parliament be then in session, or within the first fourteen days of the session of Parliament, if the latter should meet at a later date. The other report, called the detailed abstract, is to be "printed and laid before both Houses of Parliament at as early a date as may be found practicable." In England and Scotland the overseers of the poor and relieving officers for poor law unions will constitute the bulk of the enumerators. In Ireland most of the enumerators will be drawn from among "such officers and men of the police force of Dublin metropolis and of the Royal Irish Constabulary as the lord lieutenant may direct." The report for Ireland is to be published within twelve months after the census day.

The Austrian census, which was taken on December 31, 1900, was carried out on much the same lines as that of 1890. In addition to the ordinary questions connected with population, the enumerator was to obtain information as to the dwellings in cities and suburbs by asking questions as to the number of people in the dwelling, whether the members of the same household were family relations, whether the dwelling was owned or leased by those residing in it, the kind of sanitary improvements, the rent paid, and finally, whether any members of the household were unemployed, and if so, how long and why? The results of the census will be published by the Central Statistical Committee of the empire.

Unlike most of the other countries, Germany takes its census every five years, the last having been taken on December 1, 1900. The preliminary results will be published in the month of March, 1901. The final figures will not be made available before 1902. Enough has already been made known, however, to bring out the most notable feature in connection with the results in Germany—viz., the extraordinarily rapid growth of the larger cities and towns due to industrial development. In this, as in so many other respects, Germany is showing the same tendency as the United States, and is her close rival. The following list is of interest, showing the increase in the population of the thirty-three largest cities in that country since 1895 (the figures are preliminary, subject to correction):

CITIES.	POPULATION.		CITIES.	POPULATION.	
	December, 1900.	December, 1895.		December, 1900.	December, 1895.
Berlin	1,884,151	1,077,304	Stuttgart	178,318	158,391
Greater Berlin	2,600,000	.....	Altona	161,896	148,944
Hamburg	706,738	685,553	Bremen	163,418	141,894
Greater Hamburg	1,000,000	.....	Halle	156,611	116,304
München	499,959	407,307	Elberfeld	154,987	139,337
Leipzig	455,059	399,953	Strassburg	150,268	135,608
Breslau	422,738	373,109	Dortmund	149,418	111,232
Dresden	395,349	326,440	Barmen	141,945	126,992
Köln	372,229	321,564	Mannheim	140,384	91,119
Frankfurt	358,480	229,879	Danzig	138,285	126,345
Nürnberg	361,022	163,386	Aachen	128,177	115,138
Hannover	235,666	309,535	Braunschweig	118,863	96,138
Magdeburg	229,663	214,424	Esen	117,014	73,239
Düsseldorf	213,767	175,936	Posen	107,938	85,666
Stettin	210,680	140,724	Kiel	106,923	107,245
Chemnitz	206,584	161,007	Krefeld	106,001	81,752
Charlottenburg	189,300	132,577			
Königsberg	187,896	173,796			

See the articles on the several countries.

CENTRAL AMERICA, the portion of the North American continent which lies between Mexico and the South American republic of Colombia, has a total estimated area of 178,287 square miles, a territory greater than the New England States, New York, New Jersey, Pennsylvania, Maryland, and Delaware combined; and an estimated population of about 3,500,000, a little over 100,000 more than the

population of New York City. The countries comprising Central America, with their average population per square mile, are as follows: British Honduras, 46; and the five republics—Salvador, 111; Guatemala, 32; Costa Rica, 13; Honduras, 10; and Nicaragua, 9. Very few of the inhabitants are of pure European blood, the mass of the people being Indians and mestizos.

One of the most noteworthy features in the development of Central America, outside British Honduras, is the growth of German industry and influence. A similar but more advanced tendency exists in the southern states of Brazil (*q.v.*). The power of Germany in Central America, especially in Guatemala, is constantly increasing. In that country and in Nicaragua and Costa Rica, besides five well-established German banking houses, there are about one hundred prosperous German commercial houses, having an aggregate capital of eight and one-third millions of dollars. Besides holding government bonds, railroad and bank shares, mortgages, etc., Germans have invested about \$16,000,000 in industrial enterprises, and they own land estimated at \$18,088,000 in value. Of this amount, 85 per cent. represents land in Guatemala, 12 per cent. in Costa Rica, and 3 per cent. in Nicaragua. Their total interests in Guatemala, Nicaragua, and Costa Rica are estimated at \$44,030,000, \$10,472,000, and \$9,520,000 respectively. As about \$1,666,000 are invested in Salvador and \$1,428,000 in Honduras, German financial interests in the republics may be estimated at over \$67,000,000. To a great extent this amount represents absentee owners; the number of resident Germans in Central America is not large. In Brazil, however, the German influence is chiefly due to a large resident German population.

The trade of Central America with the United States is given as follows for fiscal years:

	Imports from the United States.			Exports to the United States.		
	1898.	1899.	1900.	1898.	1899.	1900.
British Honduras.....	\$576,111	\$500,802	\$690,447	\$171,920	\$196,303	\$198,040
Costa Rica.....	1,530,161	1,240,950	1,462,355	2,732,426	2,581,899	2,980,030
Guatemala.....	1,201,714	1,104,963	785,462	1,854,303	2,111,264	2,402,978
Honduras.....	752,208	832,016	1,181,193	794,741	911,849	998,606
Nicaragua.....	1,019,505	1,186,511	1,815,129	1,095,865	1,514,630	1,530,266
Salvador.....	726,575	635,414	679,440	799,145	1,098,703	738,674
Total.....	\$5,896,269	\$5,488,656	\$6,547,136	\$7,438,400	\$9,408,548	\$8,828,594

CENTRAL HEATING STATIONS. See HEATING FROM CENTRAL STATIONS.

CEYLON, PROGRESS OF THE. See Appendix.

CEYLON, an island and a British colony in the Indian Ocean, off the southern extremity of Hindustan. It has an area of 25,365 square miles, and its population was estimated at the end of 1899 at 3,489,293. Capital, Colombo, with a population of 127,836 in 1891. The greater part of the population is composed of Singhalese, who were supposed to number 2,195,947 in 1898, and the remainder consists of 993,856 Tamils, 207,425 Moors, which are the non-Malay Mohammedans, 24,071 Burghers, and 11,119 Malays. The principal occupation of the inhabitants is agriculture, and nearly one-fifth of the total area of the island is under cultivation. The main products of the island are cocoanuts, paddy, cacao, and tobacco. The tea industry has improved considerably during 1899, the output for that year being 129,894,156 pounds, against 122,395,518 pounds in 1898. The live stock of the island in 1899 consisted of 4599 horses, 1,379,800 horned cattle, 156,874 goats, and 84,215 sheep. The colony had also 1111 looms, 2461 oil mills, and 4 sugar mills. The principal mineral on the island is plumbago, of which there were 1692 mines and pits in 1899. The mining of gems is also an important industry, and in 1899 there were 491 gem quarries in operation. The manufacture of salt is a government monopoly, and yielded in 1899 a revenue of 1,091,798 rupees. The commerce of the island during the calendar year 1899 has increased to a considerable extent. The exports for that year amounted to 101,086,619 rupees, against 84,076,820 rupees in 1898. The principal articles of export were tea, 51,864,763 rupees, against 47,734,251 rupees in 1898; coconut oil, 6,062,419 rupees; cinnamon, 2,760,692 rupees; and coffee, 1,350,413 rupees. The greater part of the exports went to the United Kingdom and the colonies. The imports for 1899 amounted to 101,542,220 rupees, against 87,525,034 rupees in the preceding year. The principal articles of import are cotton goods, rice and other grains, coal and coke, and liquors. Of the total amount of imports, 31,555,193 rupees came from Great Britain. During the calendar year, 3845 vessels, with a tonnage of 3,721,782, entered the Ceylon ports. Of the total number of vessels entered, 1491, with a tonnage of 2,721,455, were British. The railways of the island, which have

a total length of 297 miles, are all owned and operated by the government. The total earnings for 1899 amounted to 7,658,886 rupees, and the expenditures, 4,104,353 rupees, leaving a clear profit of over 3,000,000 rupees. There were also 3594 miles of roads, of which 2297 were metalled, and 152 miles of canals. The total length of telegraph lines in 1899 was 1167 miles. The official returns for the calendar year 1899 give the revenue receipts for that year at 25,913,141 rupees. The principal sources of revenue were: Customs, 6,752,367 rupees; licences, excise and internal revenue, 5,630,772 rupees; and railways, 7,626,888 rupees. The expenditures for 1899 amounted to 24,950,940 rupees. The main items of expenditure were: Public debt, 2,802,454 rupees; railways, 4,098,601 rupees; public works, 3,450,940 rupees; military, 2,519,076 rupees; hospitals and dispensaries, 1,259,266 rupees; and pensions, 1,115,583 rupees. The public debt of the colony at the end of 1899 amounted to £3,445,839, and the local silver debt, 3,253,191 rupees. The total value of assets was estimated in January, 1900, at 24,188,315 rupees, leaving an excess of 2,859,067 over the total amount of liabilities. The Ceylon Savings Bank of Colombo had at the end of 1899, 23,950 depositors and deposits to the amount of 3,742,167 rupees. The government savings bank had 43,850 depositors and deposits amounting to 1,168,061 rupees. The prevailing religion on the island is Buddhism; and, according to the census of 1891, the population of the island consisted of 1,877,043 Buddhists, 615,932 Hindoos, 211,995 Mohammedans, and 302,127 Christians. The educational institutions of the colony are numerous, and consisted in 1899 of 489 government schools, with 47,482 pupils; 1263 grant-in-aid schools, with an enrolment of 111,145, and 1887 unaided schools, with 34,841 pupils. The total number of scholars was 193,468, or 6.33 per cent. of the total population of the colony. Higher education is provided by the Royal College at Colombo, the capital of the island, with 295 students in 1899 and a technical college with 127 students. There is also an agricultural and a railway school. There are 68 hospitals and asylums on the island, in which 54,705 people were treated during 1899. At the head of the administration of the colony is a governor, assisted by an executive council of 5 members, all government office-holders, and a legislative council of 17 members, including the 5 members of the executive council. For purposes of administration the colony is divided into 9 provinces, each administered by a government agent. A contingent of 125 men and 5 officers was raised by the colony to aid the imperial government in the South African War. Two thousand Boer prisoners, including General Olivier and his sons, were sent to the island during the year.

CHAPPEE, General ADNA ROMANZA, commander of the small force of Americans that took part in the expedition for the relief of the embassies at Peking, August, 1900. He was born at Orwell, O., in 1842, and entered the army at the age of 19. In 1863 he was commissioned 2d lieutenant, and two years later 1st lieutenant. During the war he received brevets for gallantry at Gettysburg and Dinwiddie Court-House, Va. He rose in command during the troubles with the Indians in Arizona and Texas, and was appointed lieutenant-colonel in 1890. He served in the Santiago campaign, especially distinguishing himself at El Caney. On June 30, 1900, he was ordered to take command of the American troops sent to China after Admiral Seymour's failure to relieve Peking. He has proved an efficient commander. However, his protestations against the looting of the German troops brought him into difficulties with Count von Waldersee, commander-in-chief of the allied forces in China.

CHAMBERLAIN, JOSEPH, English colonial secretary and chief exponent of British imperialism, was born in London in 1836, studied at the University College, and became a steel manufacturer in Birmingham. Made mayor in 1873, he brought about the municipalization of the gas and water works, and carried out a series of public improvements that turned Birmingham into a new city. In the execution of his plans against fierce opposition he displayed fine financial and administrative ability, untiring energy, and a spirit of cool pugnacity that still inheres in the conqueror of the Boers. He was chosen by the Liberals as member of Parliament for Birmingham in 1876, for Birmingham West in 1885, and was president of the Board of Trade with cabinet rank from 1880 to 1885. He broke with Gladstone on the Irish question in 1886, and vehemently opposed Home Rule. In 1895 he became colonial secretary in Lord Salisbury's coalition ministry, and initiated a rigorous Greater Britain policy. The action of the British government in the matter of the Transvaal was Mr. Chamberlain's, and popular opinion called him the author of the South African War and the real head of the cabinet. In 1900 he was decidedly the strongest figure in British politics, the most applauded and hated man in England. The reverses of the opening period of the war stirred up bitter attacks on him. He was denounced as the instigator of the Jameson Raid, and the publication in the *Independence Belge* at Brussels of supposedly incriminating letters of his caused a demand in Commons for a reinvestigation of that affair. Before the country the secretary spiritedly defended himself, denying all personal responsibility for the

war, insisting upon its necessity and justice, and predicting its ultimate success. In the general elections of September and October, following on the dissolution of Parliament, Mr. Chamberlain was practically the only issue. Against him the Opposition concentrated all the violence of an exceptionally violent campaign. He was re-elected. At the opening of Parliament the exasperated minority made a personal assault on Mr. Chamberlain. They stated that he and members of his family owned interests in firms holding government contracts, and, denying malice, drew the inference. The secretary put up an able defence, that left his enemies unsatisfied. The House, however, supported him by a large majority. In the new cabinet Mr. Chamberlain remained colonial secretary, and it was understood that the incorporation of the conquered Boer republics with the empire would be left in his hands. His plans of reconstruction, announced in Commons, received general approval and ministerial applause.

CHAMBERLAIN, Mellen, LL.D., jurist and librarian, died at Chelsea, Mass., June 25, 1900. Born at Pembroke, N. H., June 4, 1821, he graduated at Dartmouth College in 1844; studied at the Harvard Law School, of which he became librarian, and began the practice of law in Boston in 1849. He served in both branches of the State Legislature, and was a justice of the municipal court of Boston, 1866-78, the last eight years chief justice. He left the bench to become librarian of the Boston Public Library, continuing as such until 1890. His large collection of autographs is deposited in that library. In 1898 he published *John Adams, the Statesman of the American Revolution, with Other Essays and Addresses*.

CHAPELLE, Placide Louis, Roman Catholic archbishop and apostolic delegate, has been engaged during the year 1900 in the Philippines, endeavoring to adjust the new conditions experienced by the Catholic Church in these islands and taking part in the discussion of the question of the property owned by the friars. Archbishop Chapelle, who had served previously as apostolic delegate in Cuba and Porto Rico, arrived in the Philippines early in the year. To the disappointment of the inhabitants of the islands, most of whom, though devout Catholics, desired the expulsion of the friars, he did not sympathize with them in this wish, but rather took the side of the monastic orders. Archbishop Chapelle has been in close relations with the bishop of Manila, but few of his acts or official utterances on questions of church or state have been published.

CHARITIES. See **PAUPERISM**.

CHARITY ORGANIZATION SOCIETIES, of which there are some 135 in various cities of the United States. The New York society, organized in 1882, is one of the most important, and its work is a fair example of that pursued by all, its purpose being to improve the condition of the poor by the systematic investigation of cases of distress. It spends no money in almsgiving, its funds, which it collects by voluntary contributions, being largely used in the direction of needy persons to places where they may find relief. It has 13 main departments, as follows: Central office, Fourth Avenue and Twenty-second Street; investigation department, registration bureau; district work; application bureau; wood yard; workrooms for unskilled women; laundry; penny provident fund; publications; cautionary list; charities directory, library; tenement-house reform; and dependent children. General secretary, Edw. T. Devine, 105 East Twenty-second Street.

CHARPENTIER, Gustave, French composer, was born at Dieuze, Lorraine, June 25, 1860. From 1881 he studied at the Conservatoire of Paris under Massenet—composition, Pessard—harmony, and Massart—violin, and took the *Prix de Rome* in 1887. He has written many compositions, of which the orchestral suite, *Impressions d'Italie*, has been performed in New York with great success. His symphonic drama, *La vie du poète*, was given at the Grand Opéra of Paris in 1892, and aroused a great deal of discussion pro and con in musical circles. He also wrote *Didon*, a "lyric scene" (1891); and *Sérénade à Watteau* (1896). Of his four operas in manuscript, *Marie*, *Orphée*, *Tête Rouge*, and *Louise*, the last-mentioned, of which he wrote both the words and the music, was the sensation of the season of 1900. See **MUSIC**.

CHAUTAUQUA SYSTEM OF EDUCATION, originated in 1874, is composed of the Chautauqua Assembly and the Chautauqua Scientific and Literary Circle (C. L. S. C.). The twenty-eighth annual assembly will be held at Chautauqua, N. Y., July 3 to August 29, 1901, the summer school lasting from July 6 to August 16. Among the special "days" will be a Pan-American Day, at which time officers of the exposition in Buffalo will visit Chautauqua and give addresses on the many aspects of the history and development of the idea of the exposition in connection with the countries represented. Among other special days will be Aquatic, Field, National Army, Women's Grange, Children's, Denominational, and C. L. S. C. Rallying days. The attendance at the summer school of 1900 was in round numbers 2500, enrolled in 168 courses under 83 instructors. The C. L. S. C. is a home study department,

embracing a four-years' reading course, as outlined in the *Chautauquan Magazine*. Some 260,000 readers and 50,000 graduates have pursued these courses, including circles in many foreign countries. Besides the monthly *Chautauquan*, the assembly publishes the *Chautauquan Assembly Daily Herald* during the course of the summer session. Chancellor, John H. Vincent; president, Clem Studebaker; secretary, Ira M. Miller. General offices of assembly, Cleveland, O.

CHEMICAL SOCIETY, AMERICAN, organized in 1876, in 1900 had 1715 members. President for 1901, F. W. Clarke, United States Geological Survey, Washington, D. C.; secretary, Albert C. Hale, Ph.D., 551 Putnam Avenue, Brooklyn, N. Y. City. The society has 13 local sections, as follows: Rhode Island, Cincinnati, New York, Washington, Lehigh Valley, Chicago, Nebraska, North Carolina, Columbus, Northeastern (headquarters, Boston), Philadelphia, Michigan, and Kansas City.

CHEMISTRY. The various reviews of the century's work in chemistry that appeared at the end of the year have been of great value in emphasizing the fact that, conspicuous among the marvels of science have been the development and the industrial applications of chemistry. The production of the splendid coal tar colors, culminating in the artificial preparation of alizarin and indigo at prices considerably below those of the natural products, cannot but inspire a feeling of wonder at the possible advances of the opening century. The production of aluminium from clay by utilizing the energy of the Niagara may be considered as a new indication that the United States is assuming supremacy in the manufacture of chemical products. Theory must precede practice, and the scientific laboratory is the only true way to success in the factory. The Germans have recognized this principle more clearly than any other nation. Germany's superiority in every branch of chemical industry, electricity, and engineering, so conspicuous at the Paris Exposition, has justly been attributed to the "scientific training which has slowly, but irresistibly been working for the good of that country during the last half century, and it proves that chemical industry which springs from the teachings of the classroom and the instruction of the laboratory is bound to triumph over the crude art and empiric inventiveness of the foreman."

Organizations.—The American Chemical Society (*q.v.*), which now has a membership of 1715 persons, held two meetings during the year, the first in New York City contemporaneously with the American Association for the Advancement of Science, under the presidency of William McMurtrie, during June 25-27, when twenty-four papers were read and discussed; the winter meeting was held in Chicago, Ill., during December 27-28, when fifteen papers were read and discussed, and President McMurtrie delivered a retiring address on "The Condition, Prospects, and Future Educational Requirements of the Chemical Industries." The chemical section of the American Association was presided over by James Lewis Howe, of the Washington and Lee University, who delivered an address on "The Eighth Group of the Periodic System and Some of its Problems." He traced the history of the elements of that group—namely, iron, cobalt, nickel, ruthenium, rhodium, palladium, osmium, iridium, and platinum. These nine metals belong in three sub-groups: 1, iron, ruthenium, osmium; 2, cobalt, rhodium, iridium; 3, nickel, palladium, platinum. Few oxy-salts of the platinum metals are known, but many double salts, some of which are peculiar to this group. Nowhere else is found such a variety of compounds, such as the double cyanides, the double thio-cyanates, the double nitrites, the double sulphites, and especially the complex metal-ammonium bases. The nitroso-compounds of iron, ruthenium, and osmium are unique, and the same is true of the carbonyl compounds of nickel, iron, and platinum. According to Venable's arrangement of the periodic table, the type-element and the group-element of the eighth group should possess neither valence nor electro-chemical character. For this and certain other reasons the eighth group should comprise the elements helium, neon, and argon, together with, perhaps, some element of atomic weight 85—possibly krypton. The New York section of the Society of Chemical Industry holds monthly meetings from October till June, and in the YEAR BOOK issued for 1899-1900 there is reported an increase of 155 members, making the total membership in the United States 769; thirty-five papers were read at the eight general meetings.

Atomic Weights.—Investigations have been instituted to redetermine the atomic weights of iron, barium, and uranium, but final results were obtained only in the case of iron, whose atomic weight was lowered from 56 to 55.9.

New Elements.—It is doubtful whether any new elements that will be ultimately accepted as such, were discovered during the year. The announcements of the presence of helium and coronium in the sun have given impulse to new study of the lines of the sun's spectrum. Two new metals were consequently reported to exist in our great central orb, to which the names *aurorium* and *nebelium* have been given provisionally. The position occupied by these bodies in the atmospheric layers of the sun has led to the suggestion that they are lighter than hydrogen. As no trace of

either aurorium or nebelium has as yet been found on the earth, the existence of these elements requires further demonstration. André Debierne announced to the French Academy of Sciences in April the presence of a new radio-active element which he found in the residues of pitchblende. It is described as an element allied to thorium, but differing from the latter by greater radio-activity; it is, on the other hand, different in its chemical properties from the radium and polonium of M. and Mme. Curie. The name *actinium* is proposed for it.

Inorganic Chemistry.—The elementary character even of the older elements seems to be still open to dispute. Early in the year F. Fittica made the sensational announcement that he had succeeded in producing arsenic by the oxidation of phosphorus; so that, if his results are correct, arsenic is not an element but a compound probably containing phosphorus, nitrogen, and oxygen in the proportions corresponding to the formula PN_3O . The allegation is, however, scarcely well founded, and is in all probability wrong.

The element hydrogen has attracted much attention recently. In 1899 the announcement was made of Dewar's success in liquefying that gas. In April, 1900, he achieved a still greater triumph by the production of solid hydrogen. He showed how the gas could be solidified by surrounding a tube containing it with liquid air to prevent the ingress of heat, and then by applying a powerful air pump to the liquid hydrogen transformed it into a white mass of solidified form possessing the lowest steady temperature it was possible to obtain at present— 258° below 0° Cent., or 15° on the absolute scale. Later this same chemist discussed the spectrum of the more volatile gases of atmospheric air which are not condensed at the temperature of liquid hydrogen. The absence of nitrogen, argon, and carbon was noted, but on the other hand the characteristic spectra of hydrogen, helium, and neon indicated the presence of these elements. His experiments led to the conjecture that there is a continual accession of hydrogen to the atmosphere from interplanetary space with the probable similar transfer of gases from our atmosphere. Armand Gautier presented before the French Academy of Sciences on July 9 a paper in which he showed from experimental data that pure air contains normally about two ten-millionths of its volume of free hydrogen, to which fermentation, animal and vegetable exhalations, and industrial works add a certain proportion of hydrocarbons, which is relatively large in populous cities, smaller in the country, and very slight on rocky plateaus and high mountain peaks; the pure air in motion in the loftiest regions of the atmosphere contains practically no hydrocarbons at all.

Sir William Crookes has given some study to the radio-active elements discovered by M. and Mme. Curie. According to his researches, the extraordinary emanation of rays is a property, not of uranium, as the Curies believe, but of some other substance, probably hitherto unrecognized, which he hopes to isolate.

Physical Chemistry.—In this branch of chemistry continued progress has been made during the year. The researches on the constitution of the atom, referred to last year, have been continued by Joseph J. Thompson and his pupils. His studies have been devoted chiefly to highly rarefied and electrified gases.

Sir William C. Roberts-Austin has published the results of interesting experiments on the diffusion of gold into lead at ordinary temperatures. He finds that at a temperature of 18° C. gold diffused upward, and that after a lapse of four years traces of gold could be found in the lead at a distance of 7 mm. from the surface of contact. A communication by Guntz and Ferec to the French Academy describes a series of amalgams (especially combinations of mercury with the metals sodium and potassium) that possess a crystalline form and a definite molecular composition.

During the year Lord Rayleigh made two important communications to the Royal Society on the viscosity of gases as affected by temperature. He found that, between 100° C. and ordinary temperatures, the variation of viscosity of the gases examined was the same as for hydrogen. His results corroborate those of Southerland that have already been published. An interesting study on the supersaturation of liquids by gases was presented before the French Academy by Berthelot. He distinguishes between those cases in which an abnormal quantity of gas is retained in the liquid by mechanical causes, and those cases in which the retention is due to the formation of true, though unstable, chemical compounds. In his experiments he found that physical supersaturation produces an increase, chemical supersaturation a decrease of temperature.

Louis Kahlenberg, in association with others, has been studying the toxic effect of solutions of certain acids and salts on plants; the toxic action of the acid sodium salts of oxalic, tartaric, malic, succinic, and citric acids, on seedlings of *Lupinus albus* is found to increase with the amount of free hydrogen ions, but is very far from being proportional to the concentration of these.

Organic Chemistry.—Under the title of *An Instance of Trivalent Carbon: Triphenylmethyl*, Mr. Gomberg, of the University of Michigan, announces that he prepared a new hydrocarbon, triphenylmethyl $(\text{C}_6\text{H}_5)_3\text{C}$, by the action of silver,

mercury, or zinc, on triphenylchloromethane. Two molecules of this compound do not unite to form hexaphenylethane, as the case is in all similar reactions. If Mr. Gomberg's observation is correct, the new compound is the only one among the more than seventy thousand carbon compounds known, that contains an odd number of atoms of odd valence; and it furnishes the first opportunity of studying the properties of a substance containing a carbon atom that is trivalent. H. Kauffmann published in the proceedings of the German Chemical Society an algebraic formula, with the aid of which the number of isomeric naphthalene derivatives whose existence is possible according to chemical theory, can be readily calculated. An important paper on the isomeric formylphenylacetic esters and their derivatives was published by Mr. Wislicenus in *Liebig's Annalen*. The explanation of tautomeric phenomena was fully discussed in *Liebig's Annalen* by P. Rabe, who presented the results of his study of the conditions which influence the stability of the desmotropic forms of a tautomeric substance. His paper also contains a summary of the earlier contributions that treat of tautomerism. Two English chemists, W. J. Pope and S. J. Peachey, devoted themselves to the study of optically active organic compounds, and published during the year three excellent papers, one on sulphur compounds, one on nitrogen compounds, and one on tin compounds. K. A. Hoffman published a series of papers in Berlin on the organic compounds of mercury. That indefatigable German chemist, A. Hantzsch, early in the year, in association with G. Oswald, published the results of a joint study on the transformation of color-bases into pseudo-ammonium hydroxides, cyanides, and sulphuric acids; later he published the results of his own researches on the salts and bases of triphenylmethane dyes. H. Goldschmidt and G. Keppeler published their *Dynamical Researches on the Formation of Azo Dyes*. Among Hantzsch's other papers are the following: *syn Diazotales*; *syn Diazocyanides and Diazonium Cyanides*; *The Nature of the Diazo-Haloids*, and, jointly with A. Engler, a paper of considerable importance on the *Diazo Hydroxides and Diazohydroxides*. *The Nomenclature of the Peroxides: Aldehydic Peroxides*, is the title of a paper by A. Baeyer and V. Villiger, in which the authors propose that hydrogen peroxide, its acyl derivatives, and their peroxides, should be named respectively: hydroperoxide, peracids, and peroxides. *The Synthesis of Uric Acid, Xanthine, Theobromine, Theophylline, and Caffeine from Cyanoacetic Acid* forms the subject of a highly important paper contributed by W. Traube to the proceedings of the German Chemical Society toward the close of the year.

Industrial Chemistry.—The growth and present condition of the chemical industries of the United States was summarized by Charles F. Chandler in his retiring address before the Society of Chemical Industry, at its annual meeting held in London on July 18, 1900. Dr. Chandler's splendid statement of the subject is worthy of the most careful study. It was published in the July issue of the journal of the society. Raoul Pictet, well known for his work on the liquefaction of gases, announces the discovery of a new process for the separation of the oxygen and nitrogen of the air. It consists in the initial production of a certain quantity of liquid air which is stored in tubes, and through which a current of atmospheric air is forced under a pressure of fifteen pounds to the inch. The atmospheric gases, emerging cold from the liquid air, are separated by gravity, oxygen being slightly heavier than nitrogen. In addition to these gases the air contains as an impurity some carbonic acid; and this, it is asserted, is liquefied during the operation. The two products for which commercial use is expected to be found, are the oxygen and the liquid carbonic acid. The former may be employed for the combustion of coal at high temperatures, thus making coal fires available for purposes for which only the electric arc is now suitable. Liquid carbonic acid has already a fixed place in the market, and large quantities of it are saved in breweries, where it is produced in great quantities in the fermenting of the beer.

The publication before the French Academy of Sciences, in August, by Desgrez and Balthazard of a convenient method for the indefinite renewal of vitiated air is of interest. The authors of the publication recommend the use of the compound sodium peroxide for the purpose of keeping the air in closed rooms respirable and pure. If sodium peroxide is exposed to the action of atmospheric air, a chemical reaction takes place, carbonic acid being absorbed, while a corresponding amount of pure oxygen is given off. The discoverers contend that by the use of this substance divers and others, who have to spend time under water, or in tunnels or mines, can have air purified and continually renewed within an aluminium helmet, which is coated on the inside with a preparation of sodium peroxide.

The discovery of a method of electroplating with aluminium has been announced as having been perfected by an American, but no scientific description of the process has yet been published.

Technical Chemistry at the Paris Exposition.—At the Paris Exposition no striking novelties were exhibited, but evidences of the great development of technical chem-

istry were manifest on every side. The electrolysis of the alkalies and aluminium, as well as the new processes used in the manufacture of bleaching powder and the production of pure zinc by the Höpfer process, were shown in the British section. The magnificent exhibits of the coal-tar industry were naturally the pride of the German exhibit; the collections that demonstrated the ramifications of the Stassfurt salt industry, as well as the photographic chemicals, pharmaceutical products, and synthetic medicines, were also highly considered. France showed her coal-tar products, including artificial indigo and the latest specimens from her soap, candle, sulphur, ultramarine, iodine, tartaric acid, and gelatin industries; also series of salts of rare earths, such as cerium, praseodymium, neodymium, lanthanum, thorium, and samarium, and synthetic perfumes. Copper, among the metals, was most satisfactorily displayed by the United States. The petroleum products of the Standard Oil Company were also noteworthy. Tripler's liquid air was among the exhibits of the United States.

Physiological Chemistry.—W. Gulcwitsch and S. Amiradzibi announce the isolation of a new base from Liebig's extract of meat, to which they have given the name carnosine, with a composition represented by the formula $C_9H_{14}N_4O_3$. It is extremely soluble in water, crystallizes in microscopic needles, has a strong alkaline reaction, and melts at 239° C. with decomposition.

Among the better-known chemists who have died during the year may be mentioned Nathaniel Peter Hill (*q.v.*), who resigned the chair of chemistry at Brown University to organize the Boston and Colorado Smelting Works in Black Hawk, Col. His success in managing this plant led to his subsequent election to the United States Senate. Sir John B. Lawes (*q.v.*), famous for his life-long devotion to experimental work in agricultural chemistry at Rothamsted, in England, also died during the year.

CHESS. The year 1900 was another notable period for chess, and during many months the press was recording tournaments of both national and international interest among lovers of the game. Important events of the chess world during the year were the American intercollegiate and tricollegiate tournaments, the master's tournament at New York, and the various State tourneys; the correspondence match between Canada and the United States; the cable match between this country and Great Britain, and that between the universities of the two countries; the Paris international tournament; and the masters' contests at Munich, London, Vienna, and St. Petersburg. It is worthy of special note that Americans maintained their high position at the game. The universities lost to England in their cable match, but in the cable match between the masters the Americans repeated their decisive victory of last year; Canada was also defeated by this country in the first annual correspondence match. Abroad, Pillsbury tied for first place at Munich and won second place at Paris; Marshall again distinguished himself in the foreign tournaments; and besides tying with Maroczy, who had won the Vienna tourney, for third place at Paris, is said to have defeated Pillsbury and Lasker in outside contests. The request of the Triangular College Chess League to have a representative play in the international interuniversity cable match was denied by the older American intercollegiate association on the plea of impracticability. The triangular league was formed and played its first match in 1899. The standard of play was so high, comparing favorably, according to several of the Manhattan Chess Club experts, with that of the intercollegiate league, that the feeling was natural that the triangular league should have a chance to share in the honors of the university cable match. The league also proposed in 1899 that in the following year the winners of the two intercollegiate matches in this country meet one another in a third match. Such a contest was not officially acted on; but after the tourneys of 1900 had been played, Cornell, the winner of the triangular league games, challenged Columbia, the winner of the other collegiate association, and the latter accepted, the contest to take place February 19-21, 1901. During the year Pillsbury gave some marvellous exhibitions of blindfold play. William Steinitz (*q.v.*), one of the greatest of all chess players, died on August 13. Important records of the year follow: Fifth annual cable match, America *vs.* Great Britain, March 23-24, won by America, 6 games to 4, the American players being Pillsbury, Showalter, Barry, Hodges, Hymes, Voigt, Marshall, Bampton, Newman, and Delmar; America has now won 3 out of 5 annual matches. Second annual intercollegiate cable match, Intercollegiate Association *vs.* Oxford and Cambridge, April 20-21, 6 players a side, won for second time by the English universities, $4\frac{1}{2}$ to $1\frac{1}{2}$, for the shield presented by Professor Isaac L. Rice, valued at \$100. First annual international correspondence match, United States *vs.* Canada, 100 boards, won by United States, 58 to 39. Eighth annual intercollegiate tournament, Yale, Harvard, Princeton, and Columbia, December 27-29, won by Columbia, $8\frac{1}{2}$; Princeton, 6; Harvard, 6; Yale, $3\frac{1}{2}$. Columbia has now won 3 and Harvard 5 times. Second annual tricollegiate tournament, Cornell, Pennsylvania, and Brown, December 26-29, won by Cornell, $5\frac{1}{2}$; second, Brown, $3\frac{1}{2}$; third, Penn-

sylvania, 3. The great international tournament at Paris, May 21 to June 19, 17 entries, won by E. Lasker, $14\frac{1}{2}$ out of 15 games; second, H. N. Pillsbury, $12\frac{1}{2}$; third, F. J. Marshall and G. Maroczy, 12 each; the first prize was 5000 francs, the next two places gained 2500 francs, the next two 1500, etc., the first four players receiving trophies also. National masters' tournament, London, May 3, won by Teichmann, $9\frac{1}{2}$; Gunsberg and Mason, 9 each, divided second and third prizes; Ward, $8\frac{1}{2}$, took fourth. National masters' tournament, Munich, July 24 to August 11; 16 entries: Pillsbury, C. Schlechter, and Maroczy tied for first place on 12 out of 15 games. National masters' tournament, Vienna, January 4, won by Maroczy, 9; Schlechter and Brody tied for second place on $7\frac{1}{2}$; Alapin third, $6\frac{1}{2}$. National Russian tournament, St. Petersburg, March 24: Tschigorin and Lewin tied on $14\frac{1}{2}$ and divided prizes; Lebedew third, 12. On Washington's Birthday, the great American chess day, the various State associations held their annual tournaments. Brooklyn, N. Y. City, which defeated Chicago in 1899 in a correspondence match, defeated that city in 1900 in the first annual telegraphic match, 7 to 5. The annual match between the Manhattan Chess Club, of New York, and the Franklin Chess Club, of Philadelphia, resulted in a tie on 7 games.

CHICAGO DRAINAGE CANAL. See ILLINOIS (paragraph Drainage Canal) and CANALS.

CHICAGO, UNIVERSITY OF, at Chicago, Ill., founded 1890. Among matters of interest discussed in the president's reports for the year ending July 1, 1900, was the question as to whether the so-called quarter system has justified itself at the University of Chicago. Taking the facts of the year 1898-99 as an illustration, 49 per cent. of the total number of different students were present during one quarter, 21 per cent. during two quarters, 24 per cent. during three quarters, and 6 per cent. during four quarters of the year. This means that 24 per cent. were "orthodox" students—that is, students doing three quarters of work, and that 76 per cent. took advantage in one form or another of the quarter system. The president concludes that from the student point of view the system would seem to have approved itself; and assumes that of the students in attendance in the year considered, at least one-half enjoyed advantages as a result of the quarter system which would otherwise not have been open to them. A second matter of interest discussed was that relating to freedom of speech. In the quarterly report presented at the university convocation, December 18, 1900, President Harper states that no one in any official position at the University of Chicago has at any time called any instructor to account for any public utterances which he may have made, nor has any donor of funds to the university ever indicated his dissatisfaction with the instruction given to students or with the public expression of opinion made by an officer of the university. The president believes that the abuse of freedom of speech is not so great an evil as the restriction of such liberty. College professors, he concludes, do make mistakes, and sometimes serious ones, but these are to be attributed to the professor, not to the university; and in a large majority of instances the mistake, as published to the world, is misrepresented, exaggerated, or, at least, presented in such a form as to do injustice to the professor, the university, and the cause of truth itself.

The most important event of the year was the final collection of \$2,000,000 needed to meet the requirements of Mr. Rockefeller's proposition made in 1895, by which he agreed, upon the raising of that sum, to give an equal amount. The gifts toward the fund have come, in greatly varying amounts, from over 400 persons, 90 per cent. of it coming unsolicited. Many of these gifts were for special purposes. Besides his \$2,000,000 gift, Mr. Rockefeller gave \$1,500,000, of which two-thirds were to be used as an endowment fund and the remainder for general needs of the university. It is believed that the total amount of the subscription fund represents nearly \$500,000 more than has been estimated. The Gurley paleontological collection, though estimated in the fund at \$50,000, probably is worth, at least, \$125,000. The total endowment of the university is now not far from \$11,000,000. Plans were being prepared during the year for ten new buildings, to be under construction by the spring of 1901. They include a new dormitory for men, a university commons, students' club-house, university café, university press building, central heating and lighting plant, and a men's gymnasium for physical culture, to be supplemented later by a gymnasium for athletic work and by a combined club-house and gymnasium for women. Features of the year's administration include the introduction of a summer quarter in the Rush Medical College course and the provision for elective studies in that department; the further organization of the college of commerce and administration; the change of the name of teacher's college to that of university college; and the conferring for the first time of the degree Associate in Arts, Philosophy, and Science on those who have completed the work in the junior colleges (which embrace the first half of the college curriculum—namely, freshman and sophomore work). The total number of books in the library is now 303,720. The

faculty for the academic year numbered 240, and the students, omitting duplicated names, 3183, distributed as follows: Graduate schools, 1008; divinity school, 394; senior colleges, 366; junior colleges, 636; university college, 254; unclassified, 648. It is difficult to compare the statistics of Chicago with those of other universities, owing to the quarter system. The year's income was \$740,954.13, besides a considerable amount on certain investments due, but not collected. See **PSYCHOLOGY, EXPERIMENTAL, and UNIVERSITIES AND COLLEGES.**

OHIOU. See **CHINESE EMPIRE** (paragraph Cities of China).

CHILDREN'S AID SOCIETY, organized 1853, for educating and finding homes for poor children, reports in 1900 a daily average attendance in the industrial and evening schools of 7063, and a total enrolment of 14,615. The society conducts among their 22 different schools, situated in various parts of New York City, 3 classes for crippled children (opened 1899 and 1900), and has 5 lodging-houses for boys and girls, and various health homes, summer homes, etc., in the country. President, D. Willis James; secretary, Charles Loring Brace, United Charities Building, New York City.

CHILE, a republic of South America, extends between the Andes and the Pacific from Peru to Cape Horn. The capital is Santiago.

Area and Population.—The republic comprises 23 provinces and the territory of Magallanes, the total estimated area of which up to 1899 was 290,829 square miles. In that year, however, the demarcation of Puna de Atacama, determined by arbitration with Argentina, reduced the area of Chile to 266,652 square miles—an area that still is larger than that of any European country, except Russia. A decision of the question of disputed territory south of the parallel 26° 52' 45" S., referred to representatives of the British government, had not been reached in 1900. According to the census of November, 1895, the total population, exclusive of about 50,000 Indians, was 2,712,145; this number, according to official estimate, had increased to 3,110,083 on January 1, 1900. The rural inhabitants slightly outnumber the urban, and the density of population is greatest in the province of Valparaiso, and least in the territory of Magallanes. At the end of 1899 the estimated populations of the principal cities were as follows: Santiago, 320,638; Valparaiso, 143,022; Concepcion, 55,458; Talca, 42,625; Iquique, 38,852; Chillan, 35,052; Antofagasta, 18,883; Serena, 16,561; Talcahuano, 15,376; Curico, 14,638. The foreign-born inhabitants are less than 100,000 in number, and immigration, though encouraged by the government, is small, the average being less than 2000 a year. Early in 1900 there was announced the enactment of a law providing for the establishment of 5000 families of several nationalities as colonists in the provinces of Valdivia, Llanquihue, and Cautin.

Government.—The constitution provides that the government consist of three branches—the executive, the legislative, and the judicial. The chief executive power is vested in a president, elected through an electoral college for a term of five years; he is assisted by a council of state, five of whose members are chosen by him and six by congress, and by a responsible ministry of six members, having charge of seven administrative departments. The popular presidential election takes place on June 25 in the last year of the presidential term, and the inauguration occurs on the 18th of the following September. The president in 1900 was Señor Federico Errazuriz, who was elected in June, 1896. The non-federal executive authorities are intendents, presiding over the provinces, and governors, presiding over the departments, or subdivisions, of the provinces.

The legislative power devolves upon a congress, consisting of a senate and a chamber of deputies, members of the former being chosen for terms of six years by the provinces, and of the latter for terms of three years by the departments. The number of the senators is one-third that of the deputies, each of whom represents 30,000 inhabitants or fraction thereof, not less than 15,000. Legal voters, who must be at least 21 years of age and able to read and write, constitute about one-eighteenth of the population. Besides district courts and courts of first instance in the capitals of the departments, there are six appellate courts, and in Santiago the high court of justice.

Army and Navy.—According to a law of 1897, the regular army, which in 1900 had 884 officers, must not number more than 9000 men. It is armed with Mauser rifles. In 1900 the national militia, composed of citizens between 20 and 40 years of age, numbered upward of 31,000 men. But late in the summer of that year a decree was promulgated by which citizens between the ages of 20 and 45 years were made liable to compulsory military service. Every man on completing his twentieth year is liable to be chosen by lot for one year's service with the colors, after which, if so chosen, he will become a member of the first reserve, in which he will remain for nine years. Those not allotted to the colors are immediately enrolled in the first reserve. The second reserve consists of men from 30 to 45 years old. The law

exempts certain classes from service, including congressmen, government officials, judges, clergymen, public-school teachers, only sons, and some others.

The Chilean navy consists of 5 armor-clads, 2 second-class cruisers, 2 third-class cruisers, 15 first-class torpedo boats, 4 second-class torpedo boats, 4 destroyers, 11 gunboats, and 1 third-class training cruiser. Some of these vessels are remarkably fine, particularly the following three: *Capitan Pratt*, launched at Le Seyna in 1890; displacement, 6900 tons; extreme armoring, 12 inches; nominal speed, 18.3 knots; *O'Higgins*, launched at Elswick in 1896; displacement, 8500 tons; protected by steel belt of 5 inches to 7 inches; nominal speed, 21.2 knots; *Esmeralda*, launched in 1896; displacement, 7000 tons; extreme armoring, 6 inches; nominal speed, 23 knots. The new training cruiser, *General Baquedano*, which was built at Newcastle-on-Tyne, and is 240 feet in length, with a displacement of 2350 tons, arrived at Valparaiso in February, 1900.

Finance.—Gold was the monetary standard of Chile from 1896 to July 30, 1898, when a law was enacted providing for an issue of 50,000,000 paper pesos. Since 1897 the silver peso has been worth 36.5 cents; this is also the value of the paper peso. According to official reports, the condition of public finance was satisfactory during the fiscal year 1900. The largest item of Chilean revenue is export duties, import duties ranking next; the largest expenditures are for service of the debt, public works, war and marine, and public instruction. Revenue and expenditure in pesos have been reported as follows for fiscal years:

	1896.	1897.	1898.	1899.
Revenue.....	81,328,638	85,439,021	88,472,693	100,572,937
Expenditure.....	83,610,839	84,614,284	87,726,307	94,506,313

Estimates have been as follows: 1900—revenue, 109,355,386 pesos, and expenditure, 106,058,200 pesos; 1901—revenue, 108,543,186 pesos, and expenditure, 108,276,357 pesos. The customs receipts in pesos have been as follows:

	Export Duties.	Import Duties.	Total.
1898.....	44,427,967	21,370,251	65,798,218
1899.....	47,245,169	21,368,586	68,613,755

At the beginning of 1899 the public debt amounted to £18,070,080, or 240,934,400 pesos; and the internal debt, including municipal debts, 72,892,119 pesos—total, 313,826,519 pesos, or \$114,546,678. The value of the Chilean coinage for the four years 1895-1898 was 50,708,884, of which 42,699,530 pesos were gold and 8,009,354 pesos silver. In 1898 there were 23 banks of issue, with a cash capital of 40,689,665 pesos, and 16 mortgage banks. There is no state bank.

Industries.—The conditions of industry, commerce, and finance are reported to have improved steadily during 1900. In general, the prices for minerals, especially silver and copper, advanced, and there was an increase in the nitrate output. Bank and industrial stocks advanced in value. The protective tariff is encouraging manufactures. The principal industries in Chile are agriculture, in which about half of the population are engaged, and stock raising and mining. It is reported that the country has an annual production of about 28,500,000 bushels of wheat and 8,500,000 bushels of other cereals, while over 500,000 cattle and 2,000,000 sheep, goats, etc., are reared each year. Wheat production does not greatly exceed the home demand. The beet-sugar industry is encouraged by the government; and in April, 1900, the first beet-sugar factory began operations in Santiago. A law is in force providing for a bounty of two centavos a kilogramme on all raw beet sugar produced in Chile until January 1, 1905. The mineral resources of Chile are very great, but development is held back by the difficulties of communication. The most important minerals found are sodium nitrate, copper, silver, gold, manganese, coal, and borax; besides the workings of nitrate and borax, the registered mining claims exceed more than 7000 in number. The nitrate districts extend from the south of the Camarones River to the city of Toltol and cover an estimated area of over 220,000 acres. The output of nitrate has been reported as follows: 1896, 1,092,000 tons; 1897, 1,064,075 tons; 1898, 1,254,000 tons; 1899, 31,312,580 quintals (1,443,201 metric tons). In the production for 1899 about 20,000 laborers were employed. Estimates of the production in 1900 ranged from 30,500,000 quintals to 32,000,000 quintals. It was reported in November, 1900, that the nitrate producers had formed a combine, whereby the annual output would be restricted to not more than 30,500,000 quintals. Of the nitrate exported, about 39 per cent. is sent to Germany, upward of 17 per cent. to France, 11 per cent. to Great Britain, and nearly 11 per cent. to Belgium. It has been said that, notwithstanding the richness of the nitrate deposits, the most valuable of Chilean resources is copper. The nearness of the mines to the sea renders

it probable that they will be profitably worked for many years to come. The export of copper ores in 1898 was 20,301 metric tons; in 1899, 35,854 metric tons. There was a falling off in the export of copper bars and ingots, but a compensatory increase in price.

Manufacturing interests, though not of considerable importance, are developing. There are sugar refineries, breweries, gas-works, saw-mills, shoe factories, carriage factories, and works for machine-making.

Commerce.—The foreign commerce of Chile has been estimated in pesos valued at about 77 cents, by which standard the imports and exports, including bullion and specie, in 1896 amounted to 74,082,805 pesos and 74,359,414 pesos respectively. Further statistics of commerce, now estimated in pesos valued at 36½ cents, are as follows:

	Imports.	Exports.
1897.....	138,210,918	136,631,220
1898.....	102,262,058	153,271,608
		Coin, 14,497,823—total, 168,069,431
1899.....	106,260,358	160,510,556
		Coin, 2,595,577—total, 163,106,133

Of the imports about 70 per cent., and of the exports about 56 per cent. are dutiable. The leading imports are cotton goods, cattle, sacks, machinery, and oil. The values in pesos of the principal exports in 1898 were reported as follows: Nitrate, 90,675,297; copper (in various forms), 23,484,832; wheat, 7,696,460; gold, 2,445,735; beans, 1,163,211. The exports of iodine, manganese, and other minerals were also considerable. The wheat export in 1898 amounted to 76,964 metric tons (2,828,000 bushels); in 1899, 45,000 metric tons (1,683,000 bushels); in 1900, about 6000 metric tons (220,000 bushels). The barley exported in 1898 amounted to 18,000 metric tons (826,700 bushels); in 1899, 25,000 metric tons (1,148,000 bushels). The export of copper ores in metric tons was 20,301 in 1898 and 35,854 in 1899. The average manganese export a year is about 50,000 metric tons. Great Britain is first in the foreign trade, Germany being second, and the United States, Peru, and France standing third, fourth, and fifth respectively. The value (in American money) of imports from the United States during the calendar year 1899 was \$1,395,046; in 1900, \$2,311,886; exports to the United States during the calendar year 1899, \$2,096,575; in 1900, \$2,910,531.

In the foreign trade there entered the ports of the republic in 1897, 1734 vessels of 3,140,760, and cleared 1628 of 2,943,514 tons. At the beginning of 1899 the Chilean merchant marine numbered 162 vessels of 67,107 tons.

Communications.—In 1898 the total length of railways open for traffic was 2664 miles (4286 kilometres), of which 1234 miles (1986 kilometres) belonged to the state. In that year the receipts of the state lines amounted to 13,738,667 pesos, and the expenditures, 12,788,749 pesos. In March, 1900, by judicial sale the Chilean section of the Transandian Railway was taken over by the Chilean hypothecary creditors for 1,600,000 pesos. The Chilean government agreed to pay the same amount for the title of the railway, proposing to continue its construction to a point where a six-mile tunnel might connect it with the Argentine road, now in process of construction from Mendoza. In 1900 there was a reported movement for the completion of the longitudinal railway of northern Chile, the proposed line to connect Calera with Pisagua, 2300 kilometres (1429 miles) distant. Including parts of existing lines that will have to be rebuilt, in order to have a uniform gauge, the total length of road to be constructed is 1358 kilometres (844 miles).

The length of state telegraph lines in 1898 has been reported at 9975 miles (16,052 kilometres), and the telegraph offices numbered 229. In addition there were railway and private lines aggregating 2613 miles. The receipts from telegraphs in 1898 were reported at 484,730 pesos; in 1899, 613,003 pesos. In the former year the postal receipts amounted to 953,128 pesos and the expenses, 1,028,333 pesos.

Religion and Education.—Religious toleration prevails, but the state religion is Roman Catholic. The constitution provides for a "Superintendency of Education," by which is established a system of free instruction, divided into superior, secondary, and primary. The first and second of these branches, which include instruction in mathematics, literature, fine arts, science, medicine, law, etc., are provided by the National Institute and National University in Santiago and the provincial lyceums. There are also at the seats of the bishops seminaries under church control, where instruction similar to that of the government schools is given. In 1899 there were enrolled in the institute 1169 students, and in the university 1240 students, of whom 1038 were studying law; the faculty of the institute number 57. There is also the Pedagogic Institute, which had 9 instructors and 187 students in 1899, and the Technical Commercial Institute, having in that year a student enrolment of 568.

Other statistics for 1899 are: 27 provincial lyceums; 8 lyceums for girls, with an enrolment of 1066; 1403 public primary schools, with 115,535 pupils enrolled; 445 private schools, with an enrolment of 26,294; the amount expended for public instruction during the year was 2,085,072 pesos. There is a national library at Santiago, comprising more than 86,000 volumes and 24,000 manuscripts. In 1900 the reported number of periodicals and newspapers published in Chile was 310, of which Santiago had 73 and Valparaiso 29.

Chilean Claims Commission.—For the settlement of claims brought against each other by Chile and the United States on behalf of their citizens an arbitration tribunal was appointed in 1892. The tribunal ended its term of service in January, 1896, leaving seventeen claims, aggregating over \$9,000,000, on the part of the United States and two claims on the part of Chile. On American claims, aggregating about \$19,000,000, the tribunal awarded something less than \$241,000. Of the other American claims, the largest, amounting to \$6,334,000, was settled in 1896 for \$150,000. Looking to the adjustment of the remaining claims (sixteen American, aggregating about \$2,800,000, and two Chilean), a treaty went into operation in March, 1900, pursuant to which a commission was established, consisting of Mr. William G. Gage, of Michigan, for the United States, and Señor Carlos M. Vicuna, minister at Washington, for Chile. The third member, and acting president, of the commission, Mr. J. B. Pioda, the Swiss minister to the United States.

Other Events of 1900.—A new ministry was formed in October with Señor Elias Fernandez Albano as minister of the interior; but early in November this ministry was succeeded by another, with Señor Mariano Sanchez Fonticella as minister of the interior and Señor Emilio Bello Codesido as minister of foreign relations. During the year the government endeavored to increase immigration. A contract was entered upon with an immigration company for the placing of 5000 families of agriculturists in the provinces of Valdivia, Cautin, and Llanquihue, and on the island of Chiloe. These colonists are to include Scandinavians, French, Belgians, Dutch, Swiss, English, and Scotch. It was also reported that arrangements had been made for the establishment of German colonies in Pitruquén, Pucon, Villanca, Puerto Moritt, Union, Osorm, and Valdivia. In the fall of 1900 trouble seemed imminent between Bolivia and Chile on account of the latter's demand of the permanent cession of the Bolivian territory now mortgaged to Chile. For an account of this, see the article SOUTH AMERICA.

CHINESE EMPIRE occupies that part of the continent of Asia which lies between Siberia on the north and French Indo-China and British India on the south, touching on the east a part of Siberia, Corea, and Pacific waters. The seat of government has been at Peking, but on account of the Chinese defeats in 1900 it was moved to Si-gnan-fu, in the province of Shensi.

Area and Population.—The estimated area is 4,218,401 square miles, and the estimated population 402,680,000. These totals are made up as follows: China proper, or "the eighteen provinces," 1,336,841 square miles, and 386,000,000 inhabitants; Manchuria, 362,210 square miles, 7,500,000 inhabitants; Mongolia, 1,288,000 and 2,000,000; Tibet, 651,500 and 6,000,000; Jungaria, 147,950 and 600,000; and East Turkistan, 431,800 and 580,000. In 1900 the foreigners in China, about half of whom resided in Shanghai, probably numbered upward of 15,000. The United States consul at Chefoo estimated that in the previous year the foreign residents were as follows: British, 3562; Japanese, 2440; American, 2335; Russian, 1621; Portuguese, 1423; French, 1183; German, 1134; Spanish, 448; Swedish and Norwegian, 244; Belgian, 234; Danish, 128; Italian, 124; Dutch, 106; Austrian, 90; Corean, 42; other, 29.

Government.—The head of the government is the emperor, who succeeds to the throne through appointment by his predecessor. A new emperor must belong to the royal family, and be of a younger generation than the one who preceded him. The emperor in 1900 was Kwang Hsu, who was born in 1872, and, upon the death of the emperor Tung-chi, succeeded to the throne by proclamation in January, 1875. Tung-chi had not named his successor, and so Kwang Hsu was selected by the empress dowager, who acted as regent until his coming of age in 1887. Kwang Hsu is the son of Prince Chun, the seventh brother of the emperor Hien-Feng, who was the father of the emperor Tung-chi. Accordingly, Kwang Hsu does not belong to a younger generation than his predecessors. This fact was of service to the empress dowager, when, on January 24, 1900, she named Po Tsing, a son of Prince Tuan, as the true successor of Tung-chi. It appeared, however, throughout 1900 that Kwang Hsu, nominally at least, retained his position as emperor. Kwang Hsu is the ninth emperor of the Manchu dynasty of Tsing, which overthrew the native, or Chinese, dynasty of Ming in 1644. Tszu-Hszi, the empress dowager, who was born in 1834 and became a wife of Emperor Hien-Feng, has long been regarded as a shrewd and unscrupulous diplomat. Under the emperor are various councils, which have charge of the several departments of government. Each of the eighteen

provinces of China proper, or "the Middle Kingdom," is ruled by a viceroy or governor, responsible to the government.

Religion and Education.—The three principal religions of China are Confucianism, Taoism, and Buddhism, the first being the state religion, and the last having the greatest number of adherents. In the middle and southern portions of China many of the people have mingled the three religions, and throughout the country ancestor worship prevails. There are said to be about 30,000,000 Mohammedans, 1,000,000 adherents of the Roman Catholic faith, and 50,000 Protestants. A small degree of education is general, but higher instruction, consisting chiefly of moral philosophy and classic Chinese literature, is given only to the special class, the *literati*. The examinations for admission to this class, however, are open to all Chinese. From the *literati* are chosen the governmental officials.

Army and Navy.—The Chinese army consists of two parts, the "Eight Banners" and the Yng Ping, or National Army. The first has nominally 300,000 men, of whom upward of 80,000 are kept on a war footing. The second, which is scattered throughout the eighteen provinces, has a nominal strength of 540,000 or more men, of whom about 200,000 are available. In addition there are mercenary and other available troops. The total army on a peace footing has been estimated at 300,000 men, and on a war footing at 1,000,000 men. Discipline and equipment and consequently effectiveness have until recently been regarded as very poor; but during the last few years some of the troops, notably the Tientsin Army Corps, have received modern European drill and have been equipped with rifles and machine-guns of latest make. In 1900 the principal vessels of the Chinese navy were four armored cruisers, three small cruisers, and four destroyers. The destroyers were taken by the allied fleet at the capture of the Taku forts (June 17, 1900), and were divided among Great Britain, Russia, France, and Germany.

Finance.—No complete statements of revenue and expenditure are given out by the Chinese government, but it has been estimated that before the Japanese war the budget balanced at about 89,000,000 taels. The actual amounts levied by the provincial agents are liable to exceed the nominal amounts, and a large part of the taxes remains in the hands of the officials. The principal sources of revenue are the land tax, the foreign maritime customs, and the *likin* tax on merchandise; expenditure is largely for war, provincial administration, and service of the debt. Duties on Chinese foreign trade are collected by the Imperial Customs Department, which has been under the management of an Englishman, Sir Robert Hart (*q.v.*), assisted by a corps of European, American, and Chinese subordinates. The foreign customs in 1898 amounted to 22,503,397 haikwan taels. The outstanding foreign debt, which was contracted almost entirely as a result of the war with Japan, amounts to about \$262,764,000.

Industries.—The principal industry is agriculture. The land in general is fertile and is divided into small holdings. Important crops in the north are wheat, corn, barley, millet, pease, and beans. In the south rice is the leading food product, while sugar, cotton, opium, and indigo are also cultivated. Various fruits are grown throughout the country. Tea is raised in large quantities in the provinces of Chekiang, Fokien, Hupe, Honan, An-hwai, Kiangsi, Kwangtung, and Sechwan. The manufacture of silk is of prime importance, and though the mulberry tree grows in all the provinces, the largest quantity and the best quality of silk comes from Chekiang, Kwangtung, Kiangsu, and Sechwan. A number of cotton mills and establishments for winding silk have been established by foreigners in Shanghai and Canton, but these institutions, like all other modern labor-saving devices, do not meet the approval of the Chinese. The mineral wealth of China is very great, but hitherto its exploitation has been comparatively small. Coal occurs in all of the provinces, and in certain districts the fields are exceedingly large and rich. Iron is abundant in Shansi, and copper, lead, tin, and silver occur in Yunnan.

Commerce.—The latest statistics of commerce available are those for 1899. In this year the internal trade, which was unusually brisk, was facilitated by the extension of railways. The American consul-general wrote in March, 1900, that as soon as trains begin to run "districts through which there was comparatively little traffic, such as between Paoting and Peking, suddenly commence to hum with life and activity, and there springs up a flourishing trade which was formerly undreamed of and impossible for want of cheap transport." But the events of the summer of 1900 completely changed this state of affairs. The foreign trade during 1899, both imports and exports, exceeded that of any previous year, and was double the trade of 1890. According to the statistical secretary of Chinese customs, the official source of information on foreign trade, the market value of the imports was 264,748,456 haikwan taels (\$188,103,778), and of the exports, 195,784,832 haikwan taels (\$139,105,123); after deducting import duties and charges in the case of the imports and adding estimated export duties and charges in the case of the exports, these values "at the moment of landing" and "at the moment of shipping" become 233,-



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FOUR MEN PROMINENT IN THE CHINESE IMBROGLIO.—1. Sir Claude MacDonald.
2. Edwin H. Conger. 3. Admiral Seymour. 4. Brigadier-General A. R. Chaffee.

953,853 haikwan taels (\$166,224,212) and 217,610,004 haikwan taels (\$154,613,907) respectively. In market value the imports showed a rise of 91,916,805 haikwan taels and the exports 36,747,683 haikwan taels over 1898. The greater part of this trade is with Great Britain and her colonies. The following table, taken from United States consular reports of Consul Fowler, shows the value of trade by countries in 1898 and 1899; it will be noticed that the totals, compared with the figures given above, show discrepancies, but the table will suffice to show the approximate shares of the separate countries in the trade with China, and supplies the only available figures for this purpose.

COUNTRY.		1898.		1899.		TOTAL TRADE.	
		Imports.	Exports.	Imports.	Exports.	1898.	1899.
United States	<i>hk. taels</i>	17,163,312	11,066,771	22,288,745	21,085,718	29,150,693	48,974,409
	<i>dollars</i>	11,911,389	8,318,519	16,059,041	15,024,558	20,239,158	31,688,539
Great Britain	<i>hk. taels</i>	34,962,474	10,715,958	40,161,115	13,962,547	45,678,426	54,132,682
	<i>dollars</i>	24,293,957	7,436,371	28,996,083	10,060,014	31,709,829	38,930,097
Continent of Europe, including Asiatic Russia.	<i>hk. taels</i>	11,151,880	49,727,321	13,694,802	55,320,492	54,873,301	69,015,294
	<i>dollars</i>	7,739,405	30,346,760	9,807,195	39,858,414	38,085,165	49,735,519
Japan, excluding Formosa	<i>hk. taels</i>	22,581,812	15,168,148	31,414,362	16,384,371	37,749,160	47,738,080
	<i>dollars</i>	15,671,778	10,526,082	22,634,049	11,504,867	29,139,873	34,498,935
Hong-Kong.	<i>hk. taels</i>	97,214,017	62,083,512	118,006,306	71,545,558	150,297,329	180,841,769
	<i>dollars</i>	67,466,528	43,085,958	85,088,818	51,764,725	110,532,485	136,853,043
Formosa.	<i>hk. taels</i>	4,794,251	994,829	4,454,958	666,873	5,718,880	5,149,255
	<i>dollars</i>	3,328,210	641,692	3,229,557	450,492	3,968,102	3,710,039
India	<i>hk. taels</i>	19,135,546	1,224,125	21,911,214	1,731,498	20,459,671	24,230,574
	<i>dollars</i>	13,280,689	918,943	22,992,130	1,247,544	14,199,012	17,230,574
All the rest of the world.	<i>hk. taels</i>	11,742,053	13,100,690	11,767,236	13,951,872	14,848,745	25,719,106
	<i>dollars</i>	8,148,986	9,096,048	8,478,293	10,063,323	17,245,029	18,580,616
Total	<i>hk. taels</i>	218,745,347	159,037,148	273,816,065	195,548,826	377,798,495	469,364,991
	<i>dollars</i>	151,810,272	110,371,778	197,284,475	140,892,927	262,182,050	338,177,462

The export of black tea in 1898 showed an increase of 10,962,000 pounds over that of 1897, and in 1899 there was a further gain of 11,792,000 pounds. An experiment in the Wenchow district indicates that, if popular Chinese prejudice can be overcome, the use of machinery in rolling tea will prove advantageous to the growers. Half of a small crop of tea was rolled by machinery and fetched 16 cents a pound in London; the other half was rolled by hand and fetched 13 cents. The exportation of green tea is also increasing, the export for 1899 being nearly 3,800,000 pounds greater than that for 1898; there was a falling off in the amount sent to Great Britain and her colonies, but the United States in 1899 took over 5,500,000 pounds more than in 1898. Exports of silk and silk products amounted in 1898 to \$39,216,000; in 1899, to \$58,338,000. The tobacco export decreased from 49,485,000 pounds in 1898 to 23,198,000 pounds in 1899. The exportation of camel's hair and wool also increased, the latter amounting to 32,287,000 pounds. The importation of cotton goods rose in value from \$54,256,000 in 1898 to \$73,572,000 in 1899. Woollen goods also increased in value, while metals and metal wares showed a slight falling off. The opium import amounted to 6,638,000 pounds in 1898 and 7,880,000 pounds in 1899; importers and native dealers were said to have made large profits. The importation of Russian petroleum more than doubled in 1899, crowding out to some extent the American and Sumatran products. In the spring of 1900 Great Britain fully realized that the Chinese concession of steam navigation on inland waters was practically worthless.

After the first few months of 1900 the disturbances in China reduced the foreign trade to a minimum. For an account of the "open-door" agreement see the article UNITED STATES (paragraph Foreign Relations).

As the nationality of a vessel does not necessarily indicate the origin or destination of its merchandise, commercial statistics by flag show only the distribution of shipping, and not the relative importance of the trade of the different countries. The total number of ships entered and cleared at the treaty ports in the foreign and coast trade in 1898 and 1899 were by flag as follows:

	1898.	1899.		1898.	1899.
British	22,609	25,350	Corean	8	24
Japanese	2,262	3,712	Danish	268	22
German	1,831	2,078	Austrian	16	18
French	577	822	Spanish	2	14
American	743	716	Belgian	0	10
Portuguese	141	661	Non-treaty powers	23	8
Russian	118	484	Dutch	18	4
Swedish and Norwegian	498	482	Italian	0	4
			Chinese	23,547	31,009

The total tonnage entered and cleared in 1899 was 39,268,000. Of the total foreign entrances 61 per cent. were British, 13 per cent. Japanese, 8 per cent. German, 5 per cent. French, and 3 per cent. American.

Pursuant to various treaties foreign nations have commercial access to certain ports; these treaty ports, with their estimated Chinese population, are as follows:

Ports.	On or near.	Provinces.	Population.	Ports.	On or near.	Provinces.	Population.
Amoy.....	Strait of Formosa	Fokien.....	96,000	Niuchwang...	Gulf of Liaotung	Feng tien (Manchuria)	60,000
Canton.....	Canton River...	Kwangtung	2,500,000	Ningpo.....	Takin River...	Chekiang...	255,000
Chifu.....	Gulf of Chilli...	Shantung...	35,000	Pakhoi.....	Gulf of Tonking	Kwangtung	90,000
Chinkiang...	Yangtse-kiang...	Kiangsu...	140,000	Samshui...	Si-kiang...	Kwangtung	4,000
Chungking...	Yangtse-kiang...	Sechwan...	300,000	Semao.....	(Not a port)....	Yunnan...	15,000
Fuchau.....	Min River.....	Fokien.....	650,000	Shanghai...	Mouth of Yangtse-kiang...	Kiangsu...	586,000
Hangchow...	Hangchow Bay...	Chekiang...	700,000	Shaohi.....	Yangtse-kiang...	Hupe...	73,000
Hankow.....	Yangtse-kiang...	Hupe...	800,000	Suehoo.....	Grand Canal...	Kiangsu...	500,000
Ichang.....	Yangtse-kiang...	Hupe...	34,000	Swatow.....	China Sea...	Kwangtung	35,000
Kaulun.....	China Sea...	Kwangtung	55,000	Tientsin...	Pel-ho.....	Chili...	1,000,000
Kiukiang...	Yangtse-kiang...	Kiangsi...	55,000	Wenchow-fu...	East Sea...	Chekiang...	80,000
Kiang-chou-fu...	Hainan Straits...	Kwangtung	200,000	Wuchow...	Si-kiang...	Kwang-si...	50,000
Kongmun and Kumchuk...		Kwangtung	.....	Wuhu.....	Yangtse-kiang...	An-hwai...	80,750
Lappa.....	Canton River...	Kwangtung	.....	Yatung.....	(Not a port)....	Tibet.....	.....
Lungchou-fu...	Tsoikiang...	Kwang-si...	22,000				
Mengtau-hsieu	(Not a port)....	Yunnan...	12,000				

German Interests.—Before the acquisition of her sphere of influence at Kiao-chau in January, 1898, the interests of Germany in China were comparatively small, but since that time they have increased considerably. In 1898 German exports to China were valued at \$10,424,000, and Chinese exports to Germany, \$5,164,000. In a United States consular report, written shortly before the Chinese disturbances in the summer of 1900, the following statements were made: German warehouses numbering 105, and valued at \$30,000,000, were established at Amoy, Chefoo, Fuchau, Hong Kong, Swatow, Shanghai, and Tientsin. German cotton and silk mills in Shanghai were worth \$1,000,000; German capital in the Shantung railroad company amounted to \$3,000,000; the German Asiatic Bank at Shanghai had a capital of about \$3,000,000; German interests in English enterprises were valued at \$18,000,000; the private interests of Germans were valued at \$2,000,000. The total German interests in China probably exceeded \$60,000,000 in value.

Railways and Telegraphs.—The Chinese people and government have both been decidedly opposed to the introduction of railways, and it is only within the last few years that the building of steam lines has been permitted. The following statistics refer to the railways before the Boxer outrages of 1900, in which many miles of rail were torn up. In China proper, or the "Middle Kingdom," there are, in addition to a twelve-mile line between Shanghai and Wusung, two railway lines—the Chinese Imperial Railway, connecting Peking with Shan-hai-kwan, 254 miles distant, by way of Tientsin and Tong-ku; and a line, 88 miles in length with a branch of 10 miles, connecting Peking and Pao-ting-fu. The aggregate mileage, accordingly, is 364, of which, it will be observed, all but 12 miles is in the province of Chili. Near Shan-hai-kwan the Chinese Imperial Railway enters Manchuria and runs 193 miles to Niuchwang, there connecting with the Chinese Eastern Railway (Russian). Near Chen-chou there are 2 branches, the one, 7 miles in length, to Tien Chiao Chang on the coast, and the other, 30 miles in length, to the Nan Pao coal mines. The total length, therefore, of the Chinese Imperial Railway is 484 miles. The line from Chen-chou to Niuchwang, 80 miles, was completed early in 1900. At that time, it was said, the line from Tientsin to Chen-chou was paying 14 per cent. on the capital invested. The southern section of the Chinese Eastern Railway, running from Port Arthur 318 miles north through Niuchwang to Telin, near Mukden, was completed in May, 1900, having been in process of construction only about a year. The section, however, was not at that time open for traffic, since there were still necessary the rebuilding of several temporary bridges and the erection of stations and of shelters for the soldiers required to guard the line. The Manchurian section of the Siberian railway, north of Mukden, was under construction early in the year, but exact figures for the mileage completed are not available. Exclusive of the Russian lines north of Mukden, it appears that the railways in the Chinese Empire before the outbreaks of 1900 aggregated 912 miles, of which 364 miles were in China proper. The line from Peking to Pao-ting-fu, which was constructed by British capital, was transferred to a Belgian syndicate in January, 1900. The principal lines projected, under concessions from the Chinese government, include the following: An extension from Pao-ting-fu to Hankow (Belgian); in the spring of 1900 it was reported that rails had been laid for 27 miles from

Hankow and the embankment completed for 80 miles. A line from Hankow to Canton (American); Canton to Kaulun (American); Canton to Woochang (British and American); an extension from Langson (in Tonquin) to Nanning and Pakhoi (French); also another French line from Tonquin into Yunnan; Kiao-Chau to Chinan-fu and Ichou (German); Shanghai to Nanking, by way of Suchou (British); Suchou to Ningpo, by way of Hangchow (British); Tientsin to Chinkiang (Anglo-German); Tai-Yuen to Si-gnan-fu, Siangyang (Anglo-Italian). It was reported in September, 1900, that Russia had proposed the construction of a line from Samarcand, in Bokhara, to Hankow.

All the principal cities of the empire are connected by telegraph, and new lines, before the Boxer outbreak, were being rapidly extended. Peking is directly connected by overland wire with the telegraphic system of Europe. The aggregate length of the telegraph lines in 1900 was nearly 4000 miles; many miles of wire, however, in northern China were destroyed in the summer of that year.

HISTORY.

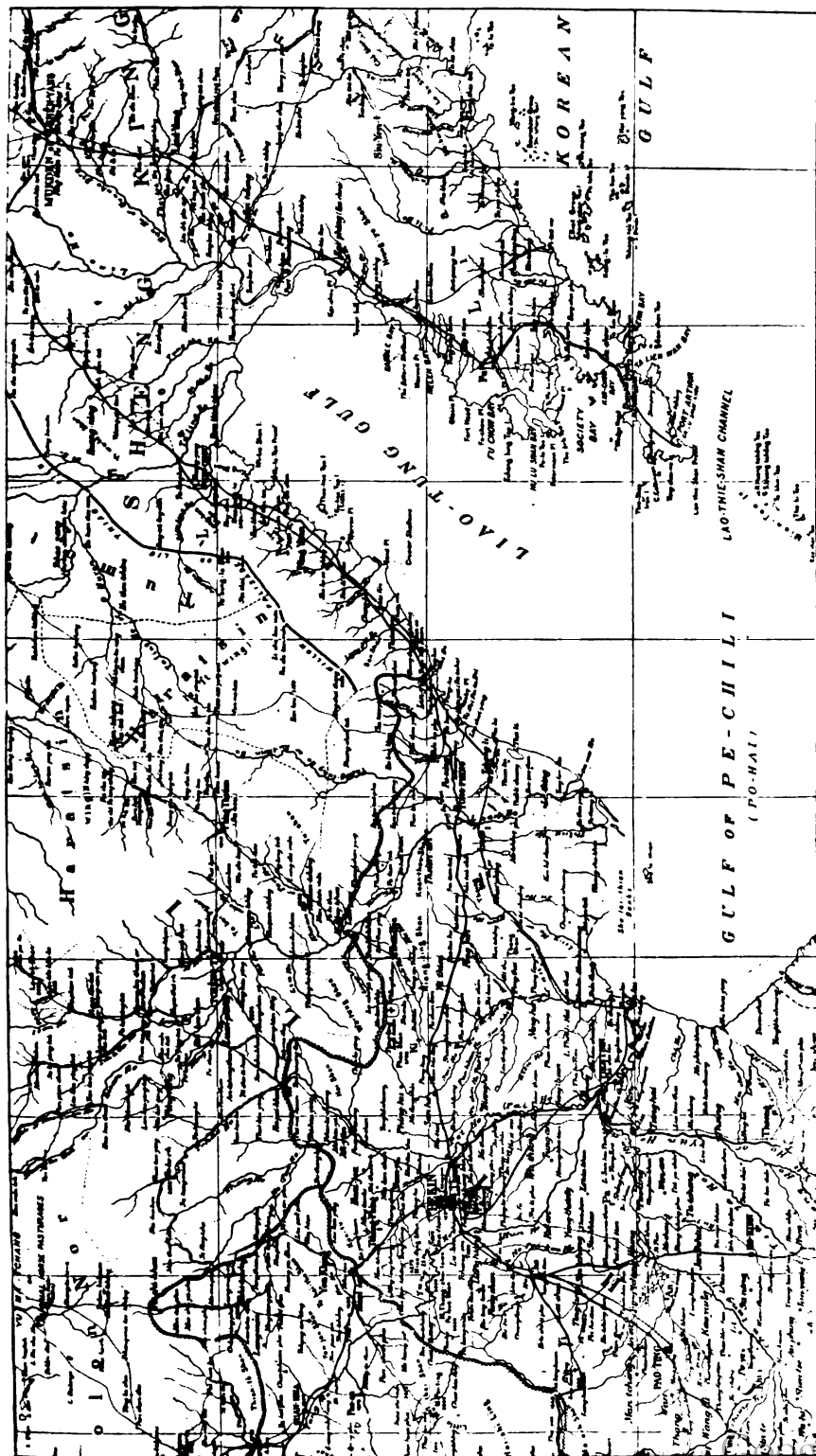
Contact between China and the nations of the West has always meant friction; this friction culminated in 1900—a year that will be memorable for the sanguinary protest of China against the presence of the foreigner and for the menace it bore not only to the future peace of the Chinese Empire, but to the friendly relations, one with another, of the great Powers of the world. Before tracing in some detail the more important events of the year—the continued development of the reactionary movement in the imperial government, the rise and savage outbreak of the Boxer Society, the action at Taku, the sieges of Tientsin and Peking, and the subsequent diplomatic negotiations—it will be well to review some of the causes, immediate and more remote, that led up to these events. In its causes, as well as in its diplomatic results, the Chinese imbroglio was still the subject of debate at the close of the year. As different plans were vigorously presented for the settlement of the affair, so different causes were assigned, or rather different degrees of emphasis were placed upon the several acknowledged causes. This article will attempt to place what seems to be proper emphasis on the most effective, as well as the most salient, factors in bringing about the outbreak of the year.

Causes of the Outbreak.—The Chinese are naturally proud, self-centred, and intolerant of foreign ideas and progress; nevertheless, in the last few years they have been compelled to make concessions of territory to European powers. In November, 1897, in retaliation for the murder of two missionaries German forces seized Kiao-Chau, in Shantung, which, together with a considerable area of surrounding territory, was leased to Germany for a term of ninety-nine years on March 6, 1898. On March 27, 1898, an agreement was signed whereby Russia acquired by a lease for twenty-five years (which may be extended by mutual consent) Port Arthur and Ta-lien-wan, at the end of the Liaotung peninsula. As an offset to the Russian acquisition Great Britain demanded Weihaiwei, on the Shantung coast, opposite Port Arthur; and on July 1, 1898, received a lease therefor to last as long as Russia should retain Port Arthur. Also in 1898 Great Britain received a concession for Mirs Bay and the region around Hong Kong. In April of the same year France acquired Kwang-chau-wan, on the southwestern coast of Kwantung. For some time the Yangtse Valley has been regarded as a British sphere of influence. In April, 1899, an agreement that affronted Chinese pride was entered into between Great Britain and Russia—namely, that the former Power should not make encroachments upon or obtain concessions in that part of the country lying north of the Great Wall, and the latter Power should not show a similar activity south of that barrier. Up to about this time the Chinese government had submitted with little resistance to the demands of the several Powers. It called a halt, however, when on March 1, 1899, Italy made a peremptory demand for San Mun Bay, on the coast of Che-kiang, and for a sphere of influence extending over some two-thirds of that province. China refused positively to make any such concession. It subsequently appeared that the self-reliance impelling the Chinese authorities to make this stand had been developing for some time. This development was a part of the reactionary programme that was commenced, or perhaps recommenced, by the *coup d'état* of the empress dowager in September, 1898—a stroke that greatly fostered the natural hatred of the Chinese people for the foreigner.

The young emperor, Kwang Hsu (*q.v.*), apparently a man of good intentions, but little force, under the tutelage of the Cantonese reformer, Kang Yu Wei, had become impressed with the inferiority of the Chinese political system and educational methods to the civilization and the practical and scientific methods of the Western nations. The emperor, to the indignation of his royal Manchu kinsmen, went so far as to buy a New Testament and read it! Through numerous decrees he instituted officially the reform movement. The old system of civil service examinations, demanding a thorough knowledge of classical Chinese literature and lore, was super-

seded by a system based upon the more relevant requirements of the West. To enable candidates in preparing for these examinations there were to be established not only common and higher schools, but colleges, and at Peking a university. Some of these institutions were established, including the university, which practically was founded by Li Hung Chang, and to the presidency of which Dr. W. A. P. Martin (*q.v.*) was appointed. The emperor, moreover, abolished various sinecures of the mandarins and established several governmental bureaus, including departments of commerce, mining, and agriculture; and he decreed such a freedom of speech that even subordinate officials were allowed to address the throne. It appears that this last provision in the emperor's scheme of reform was the young man's undoing, and precipitated the *coup d'état*. A junior official formulated a plan for further government reforms, but the higher officials refused to transmit the memorial to the emperor, who, upon learning of the matter, deprived them of their official honors. They appealed to the empress dowager, representing to her the "horrors perpetrated in the Schools of Western Knowledge," setting forth the inexpediency of the emperor's policy, and asserting that he "was driving the chariot of state so furiously that there was danger of his setting the world on fire." Thereupon, in September, 1898, the empress dowager practically compelled Kwang Hsu to abdicate. She forced him to issue a statement over his signature, relinquishing to her the reins of government. On coming again into power the old empress stated that she was not opposed to "rational progress; but she immediately surrounded herself with Manchu officials who favored reaction, or, as some one has properly said, stagnation. Reactionary Manchus were also appointed to high posts in the provincial administrations. Many of the Chinese people had welcomed the reform policy of the emperor, but most of these were easily placated by the new government, which had only to emphasize the real purpose of the palace revolution—namely, opposition to the foreigner. For was it not the foreigner who was desecrating the tombs of their ancestors, who was putting to shame their time-honored religion, who was not only exploiting, but acquiring, their country for his own pecuniary benefit? The empress cancelled the administrative and educational reforms instituted by Kwang Hsu (saving alone the new university at Peking), and within three months the government began on a large scale to improve its armaments and increase the imperial army. The entire movement was confessedly anti-foreign, but the Western Powers seemed blind to the situation, fearing little, or not at all, that the Chinese soldiers, drilled by European officers and armed with European guns, would use that training and those arms against the foreigner. And yet it was at that very time that Tung Fu-hsiang, the favorite general of the empress, who in the summer of 1900 led the imperial troops against the allied forces between Tientsin and Peking, said that the preparations were being made "to drive all foreigners into the Yellow Sea." These preparations continued for about a year. By March, 1899, it seems, they had progressed sufficiently to warrant the government in making its haughty, but by no means unreasonable, refusal to the demands of Italy for San Mun Bay.

The first decree of the empress dowager, promulgated on November 21, 1899, was a threatening refusal of further concessions to foreigners, and it authorized the provincial authorities to resist with armed force any pressure brought to effect such concessions. The inflammatory character of this document may be seen in its concluding paragraph, which was published in the *North China Herald* of December 27, 1899: "Never should the word 'peace' fall from the mouths of our high officials, nor should they even allow it to rest for a moment within their breasts. With such a country as ours, with her vast area, stretching out several tens of thousands of *li*, her immense natural resources and her hundreds of millions of inhabitants, if only each and all of you would prove his loyalty to his emperor and his love of country, what, indeed, is there to fear from any invader? Let no one think of making peace, but let each try to preserve from destruction and spoliation his ancestral home and graves from the ruthless hands of the invader. Let these our words be made known to each and all within our domains." This edict and a similar one were read by the *literati* to the people throughout the country, and imperial officials were sent to the provinces of the coast and the Yangtse Valley to ascertain what ability the provincial governments had for carrying out, if necessary, the new defensive policy. The result was the great encouragement of the Boxer Society, whose principal purposes were to exterminate the native Christians and drive the foreigners from China. The Boxer movement will be treated with more detail in a succeeding paragraph. Some attempts, it appears, had been made to restrain the society; but as its purposes really harmonized with those of the government of the dowager empress, its growth and increasing power were winked at by the Peking authorities, and by the end of 1899 it was practically uncontrolled in northern China. For more than a year before the outbreaks in the summer of 1900 the Boxer menace was recognized and discussed in the treaty ports, but the diplomatic representatives of the foreign Powers took so little heed that those outbreaks came as a frightful surprise to both the governments and the peoples of the Western countries. In August, 1899, the danger was pointed



MAP OF THE GULF OF PE-CHI-LI AND REGION ABOUT PEKING.

out by the *North China Herald*; and on February 14, 1900, after urging the arrest of the Boxer leaders, it said: "We cannot too strongly insist that, unless this is done, it is morally certain that the opening spring will witness a rising such as foreigners in China have never seen before. The whole country from the Yellow River to the Great Wall and beyond will be a blaze of insurrection, which will not only annihilate every foreign interest of every sort in the interior, but will drive every foreigner out of Peking and Tientsin under conditions which it is not difficult to foresee. There has been more or less of such an uprising for a long time. Unless strong and united efforts are now put forth, it is as certain to take place as any future event can well be. Those who are interested in preventing it will act accordingly." But, unhappily, those who were interested in preventing it did *not* act "accordingly;" the apathy of the Powers seems strange indeed. The journal just quoted said on March 28, 1900: "Those who hold the reins of power now in Peking are, with their imperial mistress herself, ignorant enough of the outside world to believe that, if they choose, they are strong enough now to defy Great Britain and to expel all foreigners from North China." And on May 9, almost, as it were, on the eve of the catastrophe, it said: "With the northern provinces overrun by the Boxers, the Yangtze Valley distinctly dissatisfied with the present position of affairs, and the southern provinces arming, a word in season cannot be missaid. It may be added that Chinese in Peking who study the undercurrents, and who write to their friends in Shanghai things which they find it prudent not to utter in the capital, are more and more convinced that the Manchus in power are preparing for a bold attempt to expel the foreigner altogether from North China."

But from the Chinese standpoint their grievances are long-standing. They claim that from 1842, when Great Britain at the point of the sword forced the opium curse upon the Chinese people, to 1897-99, when in particular Germany practically robbed the Chinese Empire of a valuable part of one of its most important provinces, the exploitation of the country has been first and last for the benefit of the foreigner and only incidentally for the good of the natives. The sacred ancestral tombs have been disturbed by the railway, which in itself the Chinese regarded as an evil, for, as they urge, does it not deprive the native carriers of their employment? The coasting trade was encroached upon by the foreigner, who subsequently demanded that merchant vessels under his flag ply the inland waters of the country. Chinese law was regarded as being of little worth; and, accordingly, missionaries, merchants, and other foreigners, by virtue of forced treaty stipulations, were granted the status of extraterritoriality. It seems also that the Chinese people were angered by the hypothecation of the *likin* tax when the indemnity loan was negotiated after the war with Japan. To similar liens on the foreign customs revenue the people had given little heed; but the *likin* tax, drawn from their own pockets and used chiefly in payment of provincial expenses, they regarded as a matter of more personal concern. And, strangely enough, their indignation was directed not so much against the government that granted as against the foreigner that obtained the hypothecation. During a part of 1900 much blame for the outbreak was laid upon the missionaries. It appears, however, that this censure was misdirected, so far, at least, as it concerned the inculcation of a new faith. True, trouble follows the missionary—for is not his attitude a constant insult to the self-satisfied native moralist?—but this usually arises from the machinations of the so-called converts and the intervention of the priests with the officials on behalf of native Christians. Such troubles before the summer of 1900 had become serious in many localities, especially in Shantung, the native province of Confucius. Ordinarily, the Chinese are simply indifferent to the spiritual aspects of Christianity. (See *MISSIONS, PROTESTANT FOREIGN*, paragraph Missionary Responsibility.) Sir Robert Hart, the imperial commissioner of maritime customs, has quoted the remark of Prince Kung: "Take away your missionaries and your opium, and you will be welcome!" and of the well-known Wen Hsiang: "Do away with your extraterritoriality clause, and your missionaries and merchants may go where they please; if your missionaries can make our people better, that will be our gain; if your merchants can make money, ours will share in the advantage!" The real objection of both these men, said Sir Robert Hart, was neither Christianity nor commerce, but class exemption and the *imperium in imperio*.

The Boxers.—Prominent in fostering the anti-foreign feeling has been a secret society, commonly called the Boxers, but known also as the Sword Society and, from its motto, the "Righteousness, Harmony, Fists" Society. Contrary to a popular belief, this society was not organized to oppose Christian missions. It is known to have troubled the Chinese government more than a century ago, and in 1803 was formally included among the forbidden associations. Little was heard of it by Westerners from that time until recently. During the last two or three years, it seems, the society rapidly gained recruits, spreading through Shantung, Chili, and other provinces of northern China; and by the summer of 1900 its members and those in sympathy with its principles were estimated to number several millions.

"The doctrine to which it owes its existence," says Dr. W. A. P. Martin, "is not orthodox Confucianism, Buddhism, or Taoism, but a superstition based on hypnotism, mesmerism, or spiritualism, as it is variously called;" and its avowed purpose, recently, at least, has been to kill all the native Christians and drive all the foreigners out of the country. Of the Boxer movement, Sir Robert Hart says that "statesmen have, perhaps, never had a more involved question to deal with as regards its origin" or "more far-reaching consequences to foresee, take advantage of, and provide against." The members of the society perform certain mystical rites, which include bowing to the southeast, repeating mysterious verbal forms, wielding swords and spears in a strange and unusual manner, and practising various gymnastic feats. The "semi-initiated" are supposed to be impervious to the cut or thrust of the sword, while the "fully initiated" are regarded as invulnerable to shell or rifle ball; and all profess to have supernatural strength. As some members were exhibited before Prince Tuan and the emperor and empress dowager, the society gained a certain legalized standing that to some extent allowed its later development. Many of the members in Shantung were supplied with arms by the Manchu governor of that province, who recognized in them an auxiliary force; and they were encouraged, it is said, by the empress dowager to proceed to Peking. At this time—in the spring of 1900—missionaries sent warnings to the foreign representatives in the capital, to whose questions the Tsung-li Yamen, or Chinese foreign office, replied that the Boxers "practised an innocent kind of gymnastics; and if they did sometimes show themselves turbulent and disposed to quarrel with native Christians, it was not without cause." Various outrages ensued, and the empress dowager ordered that the Boxers return to their homes; but the decrees, according to no less an authority than Dr. Martin, were accompanied by secret instructions not to obey them. On May 21 the members of the diplomatic corps in Peking made a formal demand upon the Chinese government for the suppression of the Boxers, and on the following day imperial troops were sent out ostensibly with that purpose. A few half-hearted engagements took place, and on June 9 the troops were withdrawn. Many of the troops went over to the Boxer cause. But by this time many native converts had been massacred, chapels had been destroyed, and the railway and telegraph stations between Pao-ting-fu and Peking had been wrecked or seriously damaged. On May 19 the Christian village of Lai-Shun, seventy miles from Peking, was destroyed and seventy-three native converts massacred. So intense was the feeling against everything foreign that the Boxers killed not only Chinese men, women, and children who had embraced the Christian faith, but those who had had intercourse with foreigners or had bought or sold foreign commodities. In June began the siege of Peking. Before considering that and the engagements at Taku and Tientsin it is necessary to review the conditions existing in the imperial household and government from the beginning of 1900.

Governmental Changes.—On January 24, 1900, an edict was signed by the Emperor Kwang Hsu, at the instance of the empress dowager, that removed him further from power than had the *coup d'état* of 1898. The attributed cause was the emperor's continued ill-health which, it was alleged, rendered him incapable of attending to state business. The same edict appointed a child of about nine years, the son of the reactionary Prince Tuan, as heir, not to Kwang Hsu, but to his predecessor, Tung-chi; and the empress dowager became regent in fact. The empress dowager dismissed Lung Lu, the commander-in-chief of the imperial army, appointing in his stead Prince Tuan, and on February 7 ordered a cessation of the study of the "new, depraved, and erroneous subjects of the Western schools," and threatened punishment to all who continued to teach them. The action of the empress caused some trouble and rioting in China, and gave not a little uneasiness to foreign Powers, especially Japan, who apprehended the dominance of Russian influence with the Manchu authorities. For some time there were rumors, which it was subsequently learned were untrue, that the emperor had been assassinated or forced to commit suicide. On June 11 he appealed to the Powers for the deposition of the empress dowager and the establishment of a protectorate. On the same day the reactionary Prince Tuan was appointed president of the Tsung-li Yamen (foreign office), to succeed Prince Ching, who was regarded as being in some degree pro-foreign in sympathy.

Action of the Powers.—Toward the latter part of May the Boxer movement had become so serious and was of such menacing portent to all foreigners, including the diplomatic representatives, while the imperial government seemed unable or unwilling to check the outrages, that the Powers ordered the despatch of many warships to Taku. This town is at the mouth of the Pei River, its neighboring village, Tong-ku, being twenty-seven miles by rail from Tientsin. On May 30 Rear-Admiral Louis Kempff (*q.v.*), commanding the United States cruiser *Newark*, landed over 60 marines, under Captain McCalla (*q.v.*), who were sent to Tientsin *en route* to Peking, which is eighty miles northwest of the latter city. The foreign warships

were assembling at Taku, and numbered 23 by June 1, including 9 Russian, 3 British, 3 German, 3 French, 2 American, 2 Japanese, and 1 Italian. On the previous day over 300 foreign marines, comprising British (75), Russians (75), French (75), Japanese (25), and the Americans, started for Peking by train, as a guard to the legations. To this movement the viceroy very unwillingly consented. Subsequently this contingent undoubtedly saved from massacre the foreign community in the city—members of the legations, missions, customs, and the merchants and visitors, together with the Chinese converts. Since Boxer outrages, including the cutting of the railway that connected Tientsin and Peking, continued during the following week, Vice-Admiral Sir Edward Seymour (*q.v.*), commander-in-chief on the British China station, left Tientsin by rail for Peking on June 10 in order to rescue the legations and other foreigners. He had in his command some 1500 troops, composed of detachments from the allied ships off Taku. The next day the force reached Lang Fang, forty miles from Peking, and there found the railway cut, and on June 12 telegraphic communication between Peking and the coast was suspended. From this time to June 24 practically nothing definite was heard of the allied force, and up to August 14 little more was known of the foreigners shut up in Peking. On June 26 Admiral Seymour returned to Tientsin. It then became known that he had failed to come within twenty-five miles of Peking, and had suffered many casualties in several engagements with immense numbers of Boxers and soldiers, on whom he had inflicted large losses. It has been objected that had Seymour's troops paid less attention to the repair of the railway, which was wrecked as rapidly as it was mended, they might have marched from Lang Fang to Peking, reaching the latter on the 13th or 14th of the month. Be this as it may, the force was deemed fortunate in escaping annihilation. On June 24 a message from Seymour was received at Tientsin, saying that on his retreat he had been surrounded about ten miles from that city by a large force, and so greatly was he harassed, being cut off from food, drink, and fuel, that unaided he could not hold out more than two days longer. Reinforcements were sent from the allied troops then at Tientsin, and Seymour's column reached the city on the 26th, having sustained a loss of 62 killed and 230 wounded.

There were various interests that demanded the protection of the several Powers, whose suspicion and jealousy, one of the other, further complicated the situation. An instance, petty in itself, but indicative of the spirit prevailing, occurred as the little force of marines was about to leave Tientsin for Peking. When the men had assembled at the railway station, it was observed that the British contingent numbered 100, while the Russian and French detachments comprised 75 each, and accordingly 25 British soldiers were left behind! The interests needing the protection of the Powers included commerce, diplomatic relations, missionary work, and the *status quo* on Chinese soil of the several governments that had received territorial concessions. International jealousy arose chiefly from a possible "partition of China," with regard to which each Power (excepting probably the United States) was suspicious and fearful of the purposes and diplomacy of the others. Up to the end of 1900 Russia in particular was suspected of unjustifiable motives. Japan was on the alert for anything that looked toward the acquisition of Corea by Russia. The latter Power was even suspected of being instrumental in precipitating the Chinese crisis, but such rumors were later discredited. However disinterested any or all of the Powers may have been, the spirit of mutual distrust was not a small factor in retarding the effective action of the allies during both the period of hostilities and that of the subsequent negotiations. In 1900 the number of foreigners in China who, in case the outbreaks had extended throughout the country, would have needed armed protection, was probably upward of 15,000.

Capture of the Taku Forts.—Learning that the Chinese had placed torpedoes at the mouth of the Pei-ho, and were gathering large bodies of troops in the vicinity of Tientsin and Taku, after telegraphic communication between Tientsin and Peking had been cut off, on June 16 the commanders of the allied fleet sent an ultimatum to the Chinese leaders at Taku, demanding the withdrawal of the latter's forces before two o'clock on June 17. In reply, at one o'clock on the morning of that day the Taku forts opened fire on the fleet. The fire was returned, and a bombardment ensued, lasting seven hours, two of the forts being blown up and the others carried at the point of the bayonet by men who had been landed at a place that made possible an assault in the rear. The number of Chinese killed was estimated at 400. Among the allies the Russians lost the most heavily—largely on account of an exploding magazine—their reported casualties numbering 16 killed and 45 wounded. The other casualties were 5 killed and 12 wounded. The forts were bombarded by the warships of Great Britain, Russia, Germany, and Japan, but the American vessels, under Rear-Admiral Kempff, took no part in the engagement, since, it appears, he had received instructions to act concurrently with the other commanders only in the protection of foreigners, and he did not regard a bombardment as making toward

that end. As the troops in the forts, in large measure at least, belonged to the imperial army—the guns being served by trained artillerymen—the engagement was regarded in some quarters as formally placing China at war with the Powers. But the several governments, including the United States, rejected this view.

The Fighting at Tientsin.—Early in June the Boxers, together with soldiers of the imperial army, began to mass around Tientsin, which is about 80 miles from Peking, and was said to have about 1,000,000 inhabitants. A part of Tientsin was known as the "foreign city," and this was made a base of operations for the allied forces. On the 17th of the month—the day of the Taku bombardment—a siege of the foreign city was begun by the Chinese, and on the 19th and 20th the allies, numbering some 4000, of whom about 800 were Americans, were obliged to sustain attacks, including a heavy bombardment that evidently was directed by gunners of the regular army. On June 21 the American consulate and much of the foreign concessions were destroyed. Two days later relief was effected by a column of Russians, Americans, and Japanese, which after suffering small losses arrived from Taku. On July 2 most of the women and children of the foreigners were successfully sent away. During the next ten days the Boxers and soldiers bombarded the foreign city, which was commanded by guns mounted on the walls of the Chinese city. On the 9th, 11th, and 13th of July heavy engagements took place. On the 9th an attack was made by 950 British, 400 Russians, and 100 Americans, all under General Dorward, of the British army, and by 1000 Japanese, under Major-General Fukushima. The allies succeeded in capturing the Chinese positions southwest of the city, the enemy losing 4 guns and probably 350 killed. A Chinese attack was repulsed on July 11, the assailants losing about 500 killed. On that day two battalions of the Ninth United States Infantry, which had arrived at Taku from Manila on July 6, reached Tientsin under command of Colonel Emerson H. Liscum (*q.v.*). Two days later the allied forces made an unsuccessful attempt to storm the native city in two columns. The two battalions of the Ninth regiment, which had been assigned to General Dorward's brigade, maintained a position under heavy fire for fifteen hours, sustaining a loss of 77 wounded and 18 killed. Among the latter was Colonel Liscum, who, to quote the report of the secretary of war, "thus ended an honorable service of nearly forty years, . . . distinguished by unvarying courage, fidelity, and high character." Lieutenant-Colonel Charles A. Coolidge succeeded to the regimental command of the American force at Tientsin. On the morning of July 14 the attack on the native city was resumed by the allies, who breached the walls, stormed and captured the forts, and secured possession of the city. In the last three days' fighting the allies lost about 250 men killed; of these upward of 100 were Russians, 58 Japanese, about 40 British, and 37 Americans; the total casualties, killed and wounded, were about 800. The city was considerably destroyed by bombardment and fire. The Japanese and American forces received special praise for meritorious conduct in action. On July 15 General Dorward, writing to the American ranking officer, said: "I desire to express the high appreciation of the British troops of the honor done them in serving alongside their comrades of the American army during the long and hard fighting of the 13th instant, and the subsequent capture of Tientsin City, and of my own appreciation of the high honor accorded to me by having them under my command. The American troops formed part of the front line of the British attack, and so had more than their share of the fighting." On July 21 Admiral Seymour reported that Tientsin and vicinity were entirely free from Chinese forces.

Forces of the Powers.—The objective of the allied forces now, as in the case of Admiral Seymour's unsuccessful column in the preceding month, was the rescue of the diplomatic corps and other foreigners shut up in Peking. The more important actions of the Powers looking toward the reinforcement of troops in China, after the middle of June were as follows: On June 18 two British Indian regiments were ordered to Hong Kong under command of Brigadier-General Sir Alfred Gaselee. He reached Tientsin July 27. On June 24 Rear-Admiral George C. Remey (*q.v.*), commander-in-chief of the Asiatic station, United States Navy, was ordered to proceed with the cruiser *Brooklyn* from Manila to Taku, where Rear-Admiral Kempff (*q.v.*) remained as second in command. On June 28, the United States battleship *Oregon*, which had been ordered from Hong Kong to Taku, ran ashore on an island in the Gulf of Chili, 35 miles northeast of Chifu. The vessel was not seriously damaged, and was floated on the 5th of July, when it started for the dry-dock at Kure, Japan. The Ninth United States Infantry left Manila on June 27, arriving at Taku July 6. On June 26 General Adna R. Chaffee (*q.v.*) (promoted major-general of United States Volunteers on July 19) was appointed commander-in-chief of the American land forces in China, and on July 1 he sailed from San Francisco on the transport *Grant*. He was commanded to act concurrently with the allied forces, but to "avoid entering into any joint action or undertaking with other Powers tending to commit or limit this government as to its future course of conduct," and to "avoid taking any action having any object except the

protection of American interests." General Chaffee reached Taku on July 28. Meanwhile various United States troops, besides the Ninth Infantry, had been ordered to Taku—the Fourteenth Infantry, under Colonel A. S. Daggett, and a light battery of the Third Artillery, from the Philippines, on July 7; and these were followed by all or portions of the First, Second, Fifth, Eighth, Fifteenth, Twenty-fourth, and Twenty-fifth Infantry, the First, Third, and Ninth Cavalry, and Fifth and Seventh Artillery, together with engineers, a medical corps, etc., all being withdrawn from various stations in the United States. Marines were also sent from Manila and San Francisco. The number of American soldiers and marines sent and available was about 17,550, of whom, according to the report of the secretary of war, "between 5000 and 6000 arrived in China before the capture of Peking."

On June 30 the British and Russian admirals at Taku decided it would be impossible to relieve Peking without a much greater force than the allies then comprised. Accordingly, the several Powers, besides the United States, whose contingent is mentioned above, determined to send additional troops. Germany decided to send 15,000 men. Upon the departure of a naval detachment for China on July 3, the German emperor made an address that was widely and unfavorably criticised, since it approved a motive of revenge on the part of the German forces in China. Great Britain decided to send 11,000 troops, and Italy 3200, while Japan announced its intention of increasing its force in China to 23,000. On July 3 Admiral Kempff reported that at a conference of the commanding officers of the Powers it had been estimated that the troops then ashore—about 20,000—would be necessary to hold the position from Taku to Tientsin, and that an additional force of some 60,000 men would be required to accomplish the march to Peking; the American quota was placed at about 10,000. It should be noted, however, that the advance from Tientsin upon Peking was finally begun on the night of August 4 by a force of about 19,000 men. Not a little discontent over the tardiness of this expedition in starting was expressed among the Western peoples, the cause popularly assigned being the mutual fear and jealousy of the Powers. That such suspicions existed is undoubtedly true, but it appears that the army of relief started as soon as legitimate military considerations would permit. Before describing the advance on the capital it will be well to enumerate some of the events not yet mentioned, and to give some account of the siege of the legations in Peking.

Other Events.—On July 9 Li Hung Chang was called by the imperial authorities to Peking, being transferred from the viceroyalty of Kwangtung to that of Chili. On the 18th it was announced that Mr. William W. Rockhill had been appointed a special United States commissioner to China, where, in the event of the death or disability of Minister Edwin H. Conger, he should act as the American diplomatic representative. Also on the 18th a decree of Emperor Kwang Hsu, called forth perhaps by the victory of the allies at Tientsin, ordered the southern viceroys and governors to protect foreigners. The French government on July 20 received a telegram from the emperor, asking France to mediate between China and the Powers, and similar requests were addressed to the other governments concerned. President McKinley received an appeal from Kwang Hsu, dated July 19, asking him to "devise measures and take the initiative" in a "concert of the Powers for the restoration of order and peace." In reply the President demanded official information concerning the Peking legations, and, in order to effect their rescue, co-operation of the imperial forces with the allies. At a conference of the admirals at Taku on July 25 it was decided by a majority vote (the British and American admirals dissenting) that the Taku-Tientsin railway be handed over to the control of the Russians. On the same day a commission, consisting of Colonel Bower, Colonel Aoki, and Colonel Wogak, was appointed to govern Tientsin.

During this time various outrages of the Boxers, not immediately connected with the operations at Taku, Tientsin, and Peking, were taking place. On July 9 it was reported that German Catholic and American mission stations in the province of Shantung and in Mukden, Manchuria, had been destroyed; there was also reported the massacre of 40 foreigners and 100 native Christians at Tai-yuen-fu, the capital of Shansi. By July 14 the Boxers had become active in Corea, and had destroyed a Catholic mission. On the following day a Chinese force invaded Russian territory and bombarded Blagovestchensk, capital of the Siberian province of Amur. Two days later the Russians declared certain parts of the Amur province in a state of war, and on the 19th they defeated the Chinese at Blagovestchensk, while a number of Russian troops were isolated at Harbin. On July 28 there was reported the massacre of all the foreigners, including several well-known American missionaries, and of several hundred Chinese Christians at Pao-ting-fu. These and other reports, together with many dismal rumors concerning the situation at Peking and in other parts of China, left the people of the Western nations during the month of July little hope for the safety or lives of their countrymen isolated in northern China.

The Siege of Peking.—The legation guard of something over 300 marines (men-

tioned in a preceding paragraph) reached Peking on May 31. From that time the foreigners in the legation district, though not at first fearing the imperial troops, were so apprehensive of danger from the Boxers that the ladies and children for safety passed the nights in the British Legation. This was the largest legation—about 2000 feet long and 600 feet broad—and, being surrounded by strong walls, was the one most capable of defence. It was bounded on the north by the Chinese official grounds, known as the Carriage Park, on the east by a canal, and on the south and west by the Mongol Market, certain Chinese dwellings, and the Carriage Park. The space thus bounded contained between twenty and thirty different buildings. In the British Legation were gathered not only the women and children, but most of the foreign representatives, and accordingly more attention was given to it in the press reports than to the others; yet, at the outer defences along the city wall, in the Soo-Wang-Foo (the grounds of a Mongol prince across the canal from the British Legation), and in the American, Russian, French, and German legations there was fighting throughout the siege.

Early in June various missionaries, fearing massacre, attempted to reach Peking; those at Tung-chou arrived safely, but those at Pao-ting-fu were unable to escape, as the railway had been torn up, and late in July they were killed. On July 9 the last train for Tientsin left the Ma-chia-fu station, outside of Peking. On the next day a telegram was sent from the legations to Li Hung Chang, at Canton, setting forth the situation and asking him to advise the empress dowager to permit no violence to come to any of the representatives protected by international law, and on June 12 an explanatory letter was despatched. Sir Robert Hart suggests that Li probably did intervene with the empress pursuant to these communications, and that thereto may be attributed the fact that not until the last few days of the siege did the large numbers of Chinese assailants put forth their full strength against the legations. For it is now recognized that, had the hordes of imperial soldiers and Boxers really determined to take the legations, they could have done so by mere force of numbers.

On June 11 the Japanese secretary of legation, Mr. Sugiyama, was murdered by soldiers of General Tung Fuh-hsiang. Thereupon the foreigners in the legation district arranged a plan of defence and stationed guards. The Peitang, or Northern Cathedral, not within the legation district, was also besieged. Here with a guard of 43 French and Italian sailors Monseigneur Favier had about 30 missionaries and 2000 Christian refugees. On June 13 Boxers rushed into the legation district and burned the missionary chapel, but, being fired upon by the Austrians, they then withdrew and carried on their work of destruction in the city outside of the legations. They were also active in destroying railway and telegraph, and by June 16 the foreigners in Peking were completely isolated. On the 19th the Tsung-li Yamen, or Chinese Foreign Office, having learned that the allied fleet was intending to capture the Taku forts (which, as we know, had actually been taken on the 17th), sent a circular note to the legations, saying that the latter must leave Peking within twenty-four hours. This the foreigners refused to do. On the morning of June 20 the German minister, Baron von Ketteler, against the advice of his colleagues, decided to interview the Tsung-li Yamen, and shortly after leaving his legation he was shot and killed. In the afternoon of the same day the Austrians and the customs people retired to the French Legation, and the women, children, most of the diplomatic corps and others were permanently quartered in the British Legation. At exactly four o'clock, which marked the expiration of the twenty-four hours, the siege, which was not destined to be raised until August 14, began with the firing of rifle bullets down the Wang-ta Street. Many native Christians and servants of foreigners took refuge in the legation district. In the British Legation there were about 600 foreigners and 1000 Chinese, while some 2000 Chinese were quartered in the Soo-Wang-Foo. The ammunition and provisions of the legations were scanty. Throughout the siege the rifles of the foreigners replied to the Chinese attacks only when the latter exposed themselves well. The legations had few machine-guns. The American Colt machine-gun did excellent work, but the British and Austrian machine-guns were not so successful. The provisions of the besieged in most part were coarse bread and poor meat. The meat was principally "that of horses, varied by an occasional mule; even that was so reduced in quantity that only three ounces *per diem* were allowed for each individual." Water was plentiful, as there were eight wells in the British Legation and at least one in each of the others. The men were organized into different departments of work, and all were kept busy. The women made many thousands of sand bags, which were used in cresting the walls and barricades of the legations.

Everything foreign or Christian in Peking was burned by the Boxers, and fires thus kindled were perhaps the greatest menace to the legations. Up to June 20 the foreigners had to fear only Boxers armed with sword and spear, but on and after that day the assailants were largely imperial soldiers, notably men of the



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VIEWS OF THE IMPERIAL CITY.—1. The Southern Gate of Peking. **2.** The Wall which separates the Tartar City of Peking from the Chinese City.

Kan-su command of General Tung Fuh-hsiang. The Chinese mounted several Krupp guns and smooth-bore cannon on the city walls south of the legation district and at other places, including the wall of the imperial city and the gate of the imperial palace, and these pieces, together with the modern repeating rifles of the troops, daily swept the legations with shell and ball. The Americans held the Chien-men gate and the Germans the Ha-ta-men gate, but both positions were abandoned. The former, however, was recaptured by a plucky sortie of Americans, British, and Russians, and was held to the end. The Soo-Wang-Foo was gallantly held by the Japanese under Colonel Sheba. Early in the siege the Austrian, Italian, and Dutch legations were abandoned and burned. After stubborn fighting the residential part of the French Legation was captured by the Chinese, but the remainder was held by the men under Commandant d'Arcy to the end of the siege. The other legations and the Peking Hotel, though receiving for days a heavy fire, were not captured. Sir Robert Hart writes that in one day there "were counted as many as seven hundred shot and shell fired at the legations," while the tens of thousands of rounds of ammunition fired from the small arms "kept up a frightful din." A fusillade of rifle firing continued from the 20th to the 25th of June; there was then quiet for three days, but on the 28th the attack was renewed, this time with both rifles and cannon. This attack kept up until July 18. About the latter date a number of letters, signed "Prince Ching and others," were brought in to the British Legation. Prince Ching, we have already noted, was regarded as being in some degree pro-foreign in sympathy, and it was reported once or twice that his troops had clashed with those of Prince Tuan, who was president of the Yamen, a Boxer leader, and also chief of the Peking Field Force. The Ching letters first invited the ministers, each with a suite of ten persons unarmed, to take refuge at the Yamen, and later asked them to quit Peking for Tientsin, and the Chinese commander-in-chief, Jung Luh, was ordered to depute officers as an escort. The ministers remembered the fate of Von Ketteler and declined to leave the legations.

The bombardment ceased on July 18, but was begun again on the 24th, this time, however, only with the small arms; it continued until August 2, being especially heavy on the 30th and 31st of July and the 1st of August. On the last day of July a Japanese messenger succeeded in bringing to the ministers a letter from Tientsin, saying that in two or three days the allied force would leave that city for the relief of the legations. On August 4 the Chinese again opened fire, which was continued to the end of the siege, the 14th. On the 7th the ministers received from the Yamen the announcement that Li Hung Chang had been appointed to negotiate by telegraph with the foreign offices of the several Powers—an announcement that brought not a little alarm to the foreigners, who feared that the clever old diplomat might make such representations to the Powers that the relief column would be withdrawn. "In fact Li did wire to the Russian Foreign Office to say that all the legations had safely arrived at Tientsin under Jung Luh's escort." On the same day that the ministers learned of Li's appointment, many of the Chinese assailants were replaced by a newly arrived Shansi contingent, under a general who boasted that he would capture the legations within five days, "leaving neither fowl nor dog." Accordingly, from the 9th to the 13th of August the fighting increased, and so fierce were the attacks of the Chinese that it is admitted the legations could not have held out another day. On the morning of the 14th—exactly one month after the capture of Tientsin—the hard-pressed legations heard the Maxim guns of the relieving force, which soon entered the city. Dr. Martin writes: "We heard the machine-guns playing on the outer wall, and never did music sound so sweet. It was like the bagpipes of Havelock's Highlanders to the ears of the besieged at Lucknow. . . . Women threw themselves on each other's necks and wept, while men grasped hands with feelings too deep for utterance." The first men to enter the British Legation were a British officer and his company of Indian cavalry. In the afternoon General Gaselee and General Chaffee arrived. The foreigners in the legation district lost over 60 killed and 100 wounded. On August 16 the Peitang, or Northern Cathedral, was relieved.

Conditions in the legation district were thus described by General Chaffee: "Upon entering the legations the appearance of the people and their surroundings, walls, streets, alleys, entrances, etc., showed every evidence of a confining siege. Barricades were built everywhere and of every sort of material, native brick being largely used for their construction, topped with sandbags made from every conceivable sort of cloth, from sheets and pillowcases to dress materials and brocaded curtains. Many of the legations were in ruins, and the English, Russian, and American, though standing and occupied, were filled with bullet holes from small arms and often had larger apertures made by shell. The children presented a pitiable sight, white and wan for lack of proper food, but the adults, as a rule, seemed cheerful and little the worse for their trying experience, except from anxiety and constant care. They were living on short rations, a portion of which consisted of a very small piece

of horse or mule meat daily. The Christian Chinese were being fed upon whatever could be secured, and were often reduced to killing dogs for meat. All the surroundings indicated that the people had been closely besieged, confined to a small area without any comforts, no conveniences, and barely existing from day to day in hope of succor."

During the siege the most alarming rumors concerning the legations gained credence in Europe and America. For a number of weeks it was generally believed that every foreigner in Peking had been killed. Of the little trustworthy information received there may be mentioned the message of Sir Robert Hart sent from Peking on June 24: "Situation desperate; make haste;" and the cipher message received on July 20 by Mr. Hay, the American secretary of state, from Minister Conger: "For one month we have been besieged in British Legation under continued shot and shell from Chinese troops. Quick relief only can prevent general massacre."

Advance of the Allies to Peking.—On August 1 a conference of the allied generals in Tientsin was held at the headquarters of Lieutenant-General Linevitch, of the Russian army, for the consideration of an immediate movement on Peking. Among those present, besides the Russian commanding general, were: Major-General Adna R. Chaffee; Brigadier-General Sir Alfred Gaselee and Colonel A. F. Barrow, of the British army; Lieutenant-General Yamaguchi and Major-General Fukushima, of the Japanese army; General Frey, of the French army; and a German naval officer. At this time Chinese forces, variously estimated at from 10,000 to 12,000 strong, were at Pei-tsang, about 7 miles up the Pei-ho from Tientsin, and it was supposed that large bodies of troops extended to the rearward as far as Yang-tsun. The conference decided that the allied army leave Tientsin on the afternoon and evening of August 4 and attack the Chinese at Pei-tsang on the following day. The force reported as available for the movement was: Japanese, 8000; Russian, 4800; British, about 3000; American, 2100; French, 800. At the hour of marching the American force, under General Chaffee, amounted to about 2500 men, while the other contingents appeared to be somewhat smaller than the numbers reported at the conference. There were in addition, however, about 200 Germans and 100 Austrians and Italians. The total force, accordingly, was probably something over 10,000. The guns numbered 70. It was planned that Pei-tsang be taken by the Japanese, British, and American contingents. The attack was begun early in the morning by the Japanese, who, after severe fighting, in which they greatly distinguished themselves, drove the Chinese from their intrenchments. The ground appears to have been too limited to allow the British and American troops, who were following in the column of march, to take part in the action.

On the next day (August 6) Yang-tsun, which is about 12 miles beyond Pei-tsang, was stormed and captured by the British and American troops, the Russians and French co-operating. The allies sustained a considerable loss, the Russian commander reporting 118 wounded, while the Fourteenth United States Infantry, which made a brilliant charge, led by Colonel A. S. Daggett, lost 7 killed and 65 wounded. General Chaffee has reported that probably 25 or 30 of these casualties were due to the "fire of British and Russian batteries after the position of the Chinese was in possession of the Fourteenth Infantry and some of the British troops." It was decided that the several forces concentrate at Tsai-tsun on August 8, and thence proceed to Tung-chou, which is at the junction of the Peking Canal and the Pei River; and, accordingly, is 13 miles from Peking and about 47 miles from Yang-tsun. The march from Yang-tsun to Tung-chou, which was occupied on the 12th, was made with little or no opposition; but the soldiers suffered from the excessive heat, and many were prostrated. At points between Pei-tsang and Tung-chou, inclusive, about 2900 troops were detached to safeguard the Pei River for the passage of supply boats and for the transport of the sick and wounded back to Tientsin. Of these, about 400 were left at Pei-tsang; 800 at Yang-tsun, comprising the entire French contingent; and 1300 at Tung-chou, of whom 800 were Japanese and 400 Russians.

All the generals of the allies, except the Russian commander, wished to attack Peking on August 13. The Russian general stated that his men were so exhausted that they required a day's rest; and it was finally agreed that the 13th should be devoted to reconnaissance, and that by the 14th all the troops should be concentrated at a point about halfway between Tung-chou and Peking. The Japanese and American forces moved forward to this point. But during the evening of the 13th the Russians, without the knowledge of the other allies, marched against Peking and attacked the Tung-pien-men gate. General Chaffee reports that he heard the cannonading throughout the night, and "supposed the firing to be the last efforts of the Chinese troops to destroy the legations." On the morning of the 14th the Japanese and American troops, followed by the British, advanced on the city, and by eleven o'clock Colonel Daggett with two companies of the Fourteenth United States Infantry placed

the first foreign colors on the walls of Peking. Before this, however, the Russians, in their independent action, had effected an entrance at the Tung-pien-men gate; but here they were thrown into great confusion, and it appears that the British and American troops were most effective in the fighting within the city. The British troops entered the legation district by the Chien-men gate, and were followed somewhat later by the Americans. There was some subsequent fighting, but by September 1 the city was fully under the control of the allies. The Chinese and Tartar cities were divided into districts, each being assigned to one of the contingents for police administration. On August 28 detachments of the allies paraded through the Forbidden City. While the various operations were taking place in and about Peking there were numerous reports of looting and outrage on the part of some of the allies, and the Russians in particular were accused of barbarous conduct toward Chinese of all ages and both sexes. Scarcely any charges of a like nature were brought against the Americans. The American casualties in the expedition from Tientsin to Peking were 2 officers and 30 enlisted men killed and 7 officers and 170 enlisted men wounded.

Shortly before the capture of Peking the Emperor, Kwang Hsu, the empress dowager, and members of the imperial court left the city and set out for Tai-yuen-fu, in the province of Shansi. Before leaving, the empress beheaded three officials who had advised her to make terms. These things, together with the bombardment of the legations from the imperial palace, left the attitude of the Chinese government no longer in doubt. A little later the court, fearing an attack of the allies, fled to Singan-fu, in the province of Shensi, where it remained throughout the year. This city, which has a population variously estimated at from 500,000 to 1,000,000, is situated over 600 miles from the coast.

Disturbances in the North and the South.—After the Boxer outrages in Manchuria, mentioned in a preceding paragraph, the Russian forces in that province were increased. Niuchwang was occupied by the Russians on August 4, Tsitsihar on August 29, Kirni on September 24, and Mukden a week later. Meanwhile, Aigun, across the Amur from Blagovestchensk, was captured, and Harbin was relieved. The south bank of the Amur was occupied and declared Russian territory; and in October Russia assumed control of the entire province of Manchuria, announcing that it would hold the province until China should have made full reparation for the outrages committed. These movements on the part of Russia were effected with not a little cruelty; as when, for example, the Russian soldiery, according to report, forced thousands of Chinese to attempt a crossing of the Amur from Blagovestchensk. As the river there is about a mile wide, and as the Chinese had nothing better than rafts, hundreds, perhaps thousands (5000, it is said), were drowned. At the last of December a Russo-Chinese agreement was concluded for the Russian military occupation of Fungtien, the southern and most important province of Manchuria, and for the resumption as soon as possible of the Chinese civil administration under a Russian protectorate. This agreement was generally regarded as being preliminary to the complete acquisition of Manchuria by Russia; and, accordingly, it met with much unfavorable comment, especially in view of Russia's concurrence in the Anglo-German agreement, mentioned in a succeeding paragraph.

Not until late in the year were there any serious outbreaks in central and southern China. This was due in part to the fact that the Boxer movement had not spread far to the south, and in part to the "conclusion of international agreements with the Yangtse viceroys to secure the protection of foreign life and property by recognizing the vice-regal government as temporarily supreme in the respective districts." An insurrectionary movement, however, directed against foreigners and, in the interest of reform, against the Manchu dynasty, arose in the southern provinces in August and continued for a number of months. Various outrages against native Christians were committed, and imperial troops were called out to suppress the rioters.

Up to the close of the year there were reports of continued massacre of native Christians by Chinese mobs in both the north and the south, and though some of the Boxer leaders were executed by the imperial authorities, the anti-foreign movement still seemed to be dangerously strong among the people.

Joint Action of the Powers after Peking.—Before the rescue of the legations the Powers realized that for effective military operations a formally appointed commander-in-chief would be needed. Early in August the German emperor recommended to the Powers the appointment of Field-Marshal Count von Waldersee, head of the German staff. The recommendation was adopted, and on August 20 Von Waldersee left Berlin; arriving at Tientsin on September 27, he immediately took command, but did not reach Peking until October 17. During the autumn of 1900 the foreign troops engaged in several "punitive" expeditions, which occasioned more reports of looting and outrage by the European soldiers. The good effect of these expeditions, in which the Americans took no part, has been questioned. On September 8 an international force 4000 strong left Peking for Pao-ting-fu, the railway terminus,

where horrible massacres of missionaries and native converts had occurred. The allies occupied the town without opposition on October 17, and a commission was appointed to inquire into the responsibility of the officials for the outrages committed. The result was that General Kuei-heng, the military commandant, Ting-Yung, the acting viceroy of Chili, and many less important Boxer leaders were shot, and the temples and other sacred buildings were destroyed.

After the capture of Peking the Powers, through a considerable amount of diplomatic correspondence, formulated general and tentative plans for the pacification of China; these plans included the following: "Punishment of the persons responsible for the outrages committed upon foreigners; the payment of indemnity for the past and the assurance of just treatment in the future; the preservation also of the territorial integrity of the Chinese Empire, and the maintenance of the 'open door' in commercial policy;" and, upon the proposal of France, the Powers agreed to prohibit the exportation of arms to China. Proposals similar to these had been made by Mr. Hay, the American secretary of state, as early as July 3. France was the only Power that fully agreed to the foregoing plans. On August 25 Russia proposed that the international troops be withdrawn from Peking to Tientsin. This plan was not adopted by the Powers, but on September 25 the United States authorities instructed General Chaffee to send his force to Manila, excepting a legation guard of one regiment of infantry, four troops of cavalry, and a light battery. Four days later Russia withdrew from Peking its diplomatic corps and most of its army, leaving only 2000 troops. On September 18 a circular note was sent to the Powers by the German foreign office, proposing that, as a preliminary condition of peace negotiations with China, the instigators of the crimes against the law of nations should be given over to the Powers for punishment and that the representatives in Peking should designate the offenders. These proposals were accepted without reserve by France, Austria, and Italy, and in principle by Russia and Japan; but the United States dissented, holding that punishment should be inflicted by the Chinese authorities themselves. After some reluctance the Chinese government acted upon the advice of Li Hung Chang and by an imperial edict of September 25 degraded several of the high officials who had been in sympathy with the Boxer movement: Prince Tuan was handed over to the Clansmen's Court and Chao Shu-chiao to the Censors' Court for punishment, and Prince Chuang and Prince Yi were deprived of rank and office. After this action by the Chinese government Germany modified its proposition so that, while the general question of punishment should be referred to the envoys, the actual infliction should be carried out by the Chinese authorities; in this form the plan for punishment was adopted by all the Powers. On October 4 the French government, through M. Delcassé, presented to the Powers a plan embodying the following demands to be made upon China: The designation of the guilty officials by the diplomatic corps at Peking and their punishment by the Chinese authorities; the prohibition of the introduction of arms and other munitions of war into China; the payment of indemnities, both to the several Powers and to private persons; the institution of a permanent legation guard in Peking, the destruction of the Taku forts, and the international maintenance of a line of communication between Peking and the coast. This proposal, as a basis upon which the envoys at Peking might negotiate with the Chinese government, was seconded by Russia and then received the general assent of the other Powers. A number of reservations, however, were made by the United States, Great Britain, Germany, and Japan. The attitude of the United States on the Chinese question is given with more detail in the article UNITED STATES (paragraph Foreign Relations).

Since the imperial court had fled to Tai-yuen-fu and later to the remote city of Si-ngan-fu, and could not be induced to return to Peking, it appointed on September 4, for the purpose of facilitating negotiations with the Powers, a peace commission, consisting of Li Hung Chang, Prince Ching, Hsu-tung, and Yung Lu, and later Lui Kun-yi and Chang Chih-tung were added. Eventually, the Powers accepted the credentials of these men, with the exception of Yung Lu's. He, it was believed, with Tung-fu-hsiang and Li Ping Heng, organized the attacks on the legations under the orders of the empress dowager. The representatives of the Powers in Peking, constituting a commission to treat with the Chinese negotiators, convened on October 8 and declared that the punishments ordered by the imperial edict of September 25 were inadequate, and pointed out that among the culprits named two of the leading offenders—Tung-fu-hsiang and Yu Hsien—were not included. These men, however, were afterward placed on the black list, whose other most prominent names were Prince Tuan, Prince Yi, Prince Chuang, Yang-yi, Duke Lan, Chao Shu-chiao, and Ying-hien. On October 10 the representatives of the Powers decided to demand, upon the basis of the general plan outlined above, that by the promulgation of imperial decrees the Chinese government should undertake the following measures: The punishment of guilty officials and the payment of an indemnity; the dismantling of all fortifications between Tientsin and the coast, including the Taku forts; the

prohibition of firearm importations; the appointment of a single minister for foreign affairs to take the place of the Tsung-li-Yamen, and the establishment of permanent legation guards at Peking; the institution of some reasonable means of communication with the emperor; and the suspension of the provincial examinations for a period of five years in the districts where the murder of foreigners had occurred. In reply to these demands, and as preliminary to definite peace negotiations, Li Hung Chang and Prince Ching submitted to the representatives of the Powers on October 16 the following concessions and proposals: Regretting the outrages that had taken place, and admitting the propriety of indemnity payments, the Chinese authorities promised that similar outbreaks should not recur; the Chinese authorities also were willing to reaffirm the existing commercial treaties or to modify them, or to negotiate new ones; but with regard to the Tsung-li-Yamen, the commissioners requested that that body be allowed to assume its former functions; and, since the foreign representatives had begun negotiations, the Chinese asked that an armistice be declared and that, when the question of indemnity should be adjusted, the military forces of the Powers be withdrawn.

On the same day, October 16, there was concluded an Anglo-German agreement for the maintenance of the *status quo* of China and the preservation of the "open door" to the commerce of all nations. In the second clause of the agreement Germany and Great Britain engaged not to make use of the Chinese complication for their own territorial advantage, but to use their influence toward the maintenance of China's territorial integrity; and in the third clause, in case any other Power should attempt to utilize this complication for such advantage, they reserved the right "to come to a preliminary understanding as to the eventual steps to be taken for the protection of their own interests in China." The other Powers were then invited to endorse the agreement; this they did (by November 1) with regard to the "open-door" clause and the second clause, but in reference to the third clause the United States, France, and Russia made reservations, Russia observing that it would "modify its attitude according to the circumstances."

The plan for negotiations, based on the French proposals of October 4 and outlined in a foregoing paragraph, was tentative, and merely looked toward the adoption by the Powers of a final joint note to be presented to the Chinese commissioners. The diplomatic discussions pending the definite formulation of this note were long and complicated. On November 11 the representatives in Peking arrived at a preliminary agreement, and on December 20 they signed the note in its final form, the American representative, Mr. Conger, delaying his signature until December 22, in obedience, he said, to orders from Washington. These orders were due to the question of indemnities. It was stated that the United States and Russia favored referring the entire indemnity question to the new court of arbitration at The Hague, but the other Powers insisted on committing it to the peace commissioners. On December 24 the joint note was handed to Prince Ching; on the 30th of the month an imperial edict authorized the Chinese commissioners to negotiate on the basis of this note, and an armistice was proclaimed. The following summary of the joint note appeared in the *London Times*:

"The note opens with a long preamble condemning the recent outrages as crimes unprecedented in the history of mankind—crimes against the law of nations, humanity, and civilization. It recounts the chief of these crimes—the assassination of Baron von Ketteler by soldiers of the regular army in obedience to orders of their commanding officers; the siege of the legations by Boxers and imperial soldiers under orders from the court. It denounces the treachery of the government in declaring through its representatives abroad that it was protecting the legations, while it was actually besieging them. It impeaches the murder by imperial soldiers of the Japanese Chancellor, M. Sugiyama, the torture and assassination by Boxers and imperial troops of foreigners in Peking and many provinces, and the desecration of foreign cemeteries and the remains of the dead. Compelled to march to Peking and vanquish the Chinese forces, the allied Powers now consent to accede to the petition of China for peace on the following irrevocable conditions, considered indispensable as reparation for the crimes committed and in order to prevent their recurrence:

"(1) An imperial prince is to convey to Berlin the emperor's regret for the assassination of Baron von Ketteler, and a monument is to be erected on the site of the murder, with an inscription in Latin, German, and Chinese, expressing the regret of the emperor for the murder.

"(2) The most severe punishment fitting their crimes is to be inflicted on the personages designated in the imperial decree of September 25, whose names—not mentioned—are Princes Tuan and Chuang and two other princes, Duke Lan, Chao Shu-chiao, Yang-yi, Ying-hien, also others whom the foreign ministers shall hereafter designate. Official examinations are to be suspended for five years in those cities where foreigners have been assassinated or cruelly treated.

"(3) Honorable reparation is to be made to Japan for the murder of M. Sugiyama.

"(4) Expiatory monuments are to be erected in all foreign cemeteries where tombs have been desecrated.

"(5) The importation of arms or *matériel* and their manufacture are to be prohibited.

"(6) An equitable indemnity is to be paid to states, societies, and individuals, also to Chinese who have suffered injury because of their employment by foreigners. China will adopt financial measures acceptable to the Powers to guarantee the payment of the indemnity and the service of the loans.

"(7) Permanent legation guards are to be maintained, and the diplomatic quarter is to be fortified.

"(8) The Taku forts and those between Peking and the sea are to be razed.

"(9) There is to be a military occupation of points necessary to ensure the safety of the communications between Peking and the sea.

"(10) Proclamations are to be posted during two years throughout the empire, threatening death to any person joining an anti-foreign society, and enumerating the punishment inflicted by China upon the guilty ringleaders of the recent outrages. An imperial edict is to be promulgated, ordering viceroys, governors, and provincial officials to be held responsible for anti-foreign outbreaks or violations of treaties within their jurisdiction, failure to suppress the same being visited by the immediate cashiering of the officials responsible, who shall never hold office again.

"(11) China undertakes to negotiate a revision of the commercial treaties, in order to facilitate commercial relations.

"(12) The Tsung-li-Yamen is to be reformed, and the court ceremonial for the reception of foreign ministers modified in the sense indicated by the Powers.

"Until the foregoing conditions are complied with the Powers can hold out no expectation of a limit of time for the removal of the foreign troops now occupying Peking and the provinces."

At the end of the year large tracts in the province of Chili had been laid waste, and there was much suffering among the people. Sir Robert Hart has pointed out that the entire Chinese situation was anomalous. The court that had used every effort to expel the legations at the close of the year was in hiding. The princes that had encouraged the Boxers to destroy the homes of the missionaries were homeless, and the missionaries were in the Peking palaces. At the close of the year many Boxers, though ready to take up arms again at an opportune moment, were working for the Peking foreign garrison, while the non-Boxer Chinese were wondering why the Powers had sent so many foreign troops, whom they regarded as brigands. There was much discussion in the press as to the final adjustment of governmental administration in China; and the various plans put forward differed all the way from that of the English authority on Far Eastern questions, Mr. Demetrius C. Boulger, who proposed the complete and definite partition of China, to that of the imperial commissioner of customs, Sir Robert Hart, who regarded the preservation of China's territorial integrity, together with the maintenance of the present dynasty, as the sanest course of action that the Powers could pursue. Sir Robert Hart also expressed the opinion—novel, indeed, for a man of affairs and a statesman of his acknowledged shrewdness—that the best and most effective method of treatment the Western peoples can adopt with regard to the Chinese is the "golden rule." He recognizes, however, the extreme improbability of any such course of action. As to the ultimate success of the possible partition of China, he is pessimistic. He adverts to the opening sentence of an ancient and celebrated Chinese romance, "Divided long, unites; united long, divides," and puts into the mouth of the Chinese people: "We are not up to date now that we have to carry on intercourse with the armed Powers of the world; we are weak, and possibly history is about to repeat itself—'united long, divides'! Russia may take the north, Germany the east, France the south, and England the centre; and it may even be a good thing for us that such should happen—it may even be better for us than for them! Our new rulers may, in fact, rule us for our own good quite as much as for their benefit; and in process of time, while our northern countrymen are seemingly becoming Russians, and others Germans, French, and English, we shall have learned all they have to teach—we shall see introduced all that goes to make states rich and powerful—and we shall have improved upon that teaching, picking their brains and developing our own to an extent they may be the last to notice. Then, one fine morning—it may be a hundred, it may be two hundred years hence—a wave of patriotic feeling will thrill through the length and breadth of the land, and we shall say, 'Now, gentlemen, you can go home,' and home they'll go—'Divided long, unites.'"

Cities of China.—Some of the important cities and towns of China are briefly mentioned in the following paragraphs.

Peking.—Peking, which was formerly the northern capital, was before its capture

the capital of the empire and, excepting Canton, its largest city. An estimate, which, however, is probably too high, places the population at 1,300,000. The city is situated in the province of Chili, in longitude $116^{\circ} 27'$ east and $39^{\circ} 54'$ west, or nearly on the parallel of Naples and of Philadelphia. A canal 13 miles in length connects Tung-chou on the Pei River with Peking, the latter being about 110 miles from the river's mouth and 80 miles from Tientsin. Peking is nominally divided into two parts, the Northern, or Tartar city, and the Southern, or Chinese. The entire city is surrounded by a wall and moat a little over 20 miles long. The walls of the Tartar city average 40 feet in width and 50 feet in height, their sides are faced with brick, and the intervening space is filled with earth and concrete. The walls of the Chinese city are about 30 feet high, 25 feet thick at the base, and 15 feet thick at the top. Within the walls of the Tartar city are two enclosures, the one within the other and each surrounded by its own wall. The innermost of these is Kin-ching, or the Forbidden City, where, as the name implies, foreigners are not allowed; here are the imperial palace and other buildings of the royal family. The second enclosure contains the governmental offices and the residences of officials. In the outer part are dwelling houses, shops, etc.; here also are the buildings of the foreign legations. The principal business portion of Peking is the Chinese city, but the volume of business comparatively is not large, as there is no foreign trade and scarcely a large industrial establishment. Peking is not well situated to be either an imperial capital or a great business centre. Of the estimated 1,300,000 inhabitants, 400,000 are said to live in the Chinese city and 900,000 in the Tartar city. Before the outbreak of 1900 the small foreign population consisted of missionaries, members of the maritime customs establishments and of the legations, and teachers in the College of Peking. The streets are always in a wretched condition, deep with dust in the dry season and with mud and water in the wet. In 1899 Legation Street was "cleaned, levelled, and macadamized, the greatest urban improvement in three centuries." Communication was opened with Tientsin by telegraph in 1884 and by rail in 1897, a second track being laid in 1898; but on account of native prejudice the railway terminus has never been brought within the walls. It was announced, however, in November, 1900, that arrangements had been made for bringing the railway into the Chinese city, the terminus to be near the Temple of Heaven. What was once a fine stone causeway runs from Peking to Tung-chou.

In November, 1900, the sanitary condition of Peking had become alarming. The natives, through an unreasonable fear that the foreign troops would interfere with funerals, had been led to leave the dead unburied. Many bodies were secreted in dwelling-houses or courtyards, and in not a few instances the persons had died of smallpox or other contagious diseases. An order forbidding natives to deposit refuse in the streets resulted in large accumulations of garbage in houses and courtyards throughout the city. Accordingly, it was feared that there would be serious epidemics during the winter of 1900-01; and the gravity of the situation was emphasized by the fact that in the best of circumstances smallpox is prevalent in Peking during the winter season.

Tientsin.—This city, which is probably the third largest in the empire, is situated in the province of Chili at the junction of the Pei-ho River and the Grand Canal, 80 miles from Peking and about 30 miles by land from the Gulf of Chili, or more than twice the latter distance by the Pei-ho. The population is said to be 1,000,000, an estimate that some writers are inclined to regard as too large. As the city is the only considerable port for an interior population of perhaps 100,000,000, it has been a seat of great commercial activity, and shortly before the disturbances of 1900 the general trade was "increasing by leaps and bounds." The export is of recent growth and is largely the result of foreign enterprise. Tientsin had a number of important local industries, among the chief of which was distilling from sorghum or millet. It is said that the trade of the city is endangered by the silt accumulations of the Pei-ho. Measures have been taken for the improvement of the river, but it is thought that permanent success can be attained only by continued dredging of the Taku bar. The Pei-ho is not navigable for sea-going vessels above Tientsin. The city is connected by rail with Peking, and early in 1900 a line, completed to Niuchwang, 348 miles distant, connected there with the Chinese Eastern Railway (Russian). Tientsin will be especially remembered by Europeans not only for the appalling scenes of 1900, but also for the infamous massacre of the French Sisters of Mercy and other foreigners on June 21, 1870.

Taku.—This village, unimportant except for its forts, is situated on the south side of the Pei-ho, where the river enters the Gulf of Chili. The town is 30 miles from Tientsin or 67 miles by river. The railway, which is a part of the Chinese Imperial line, does not actually reach Taku, but touches Tung-ku, a town two miles up the river. There are two anchorages at Taku, an inner and an outer. At certain tides steamers cannot cross the bar, which at spring tides is covered by twelve

feet of water. Taku is the key to the Pei Valley, including Tientsin and Peking, and its forts have been the scene of several memorable bombardments.

Si-gnan-fu, the capital of the province of Shensi, became the seat of the imperial government shortly after the court fled from Peking upon the arrival of the army of relief. This is the fifth time in its history that Si-gnan-fu has been the capital of China. The city, which has a population variously estimated at from 500,000 to 1,000,000, was founded in the twelfth century B.C. It is situated at the confluence of the Wei and King rivers, and is surrounded by a strong wall. Si-gnan-fu has clean, straight streets, fine shops, a large arsenal, where cannon and rifles are manufactured, and it is an important centre of trade. The city and surrounding districts are said to be the richest in China in all sorts of antiquities. It contains the famous Nestorian tablet commemorating the introduction of Christianity into China in the year 781 and setting forth the event in an inscription in Chinese and Syriac.

Niuchwang, the most northerly of the Chinese treaty ports, is situated in Manchuria about 13 miles from the mouth of the Liao River, which empties into the Gulf of Liaotung. The chief importance of the city, the population of which is said to be 60,000, arises from the fact that it is near the junction of the Chinese Eastern Railway, which will connect Port Arthur with the Trans-Siberian road, and the Chinese Imperial Railway, which has been extended thither from Tientsin. The trade is considerable. Niuchwang was occupied by the Russians on August 4, 1900.

Port Arthur and Talienwan.—Port Arthur, which is situated at the southern extremity of the Liaotung Peninsula, was formerly the most important naval arsenal of China, but in the war with Japan in 1894 was captured and its works destroyed. This port and Talienwan Bay, which lies a little to the northeast of Port Arthur, were leased to Russia, March 27, 1898, for a period of twenty-five years, with the provision that the lease could be extended by agreement. The harbor of Port Arthur is closed to all vessels except Russian and Chinese war-ships; a part of Talienwan harbor is also reserved for these fleets, but the remainder is open to merchant vessels of every flag. Russia has made Port Arthur a great naval station and fortress, and is still increasing its stores and defences. It will be the terminus of a great branch of the Trans-Siberian Railroad.

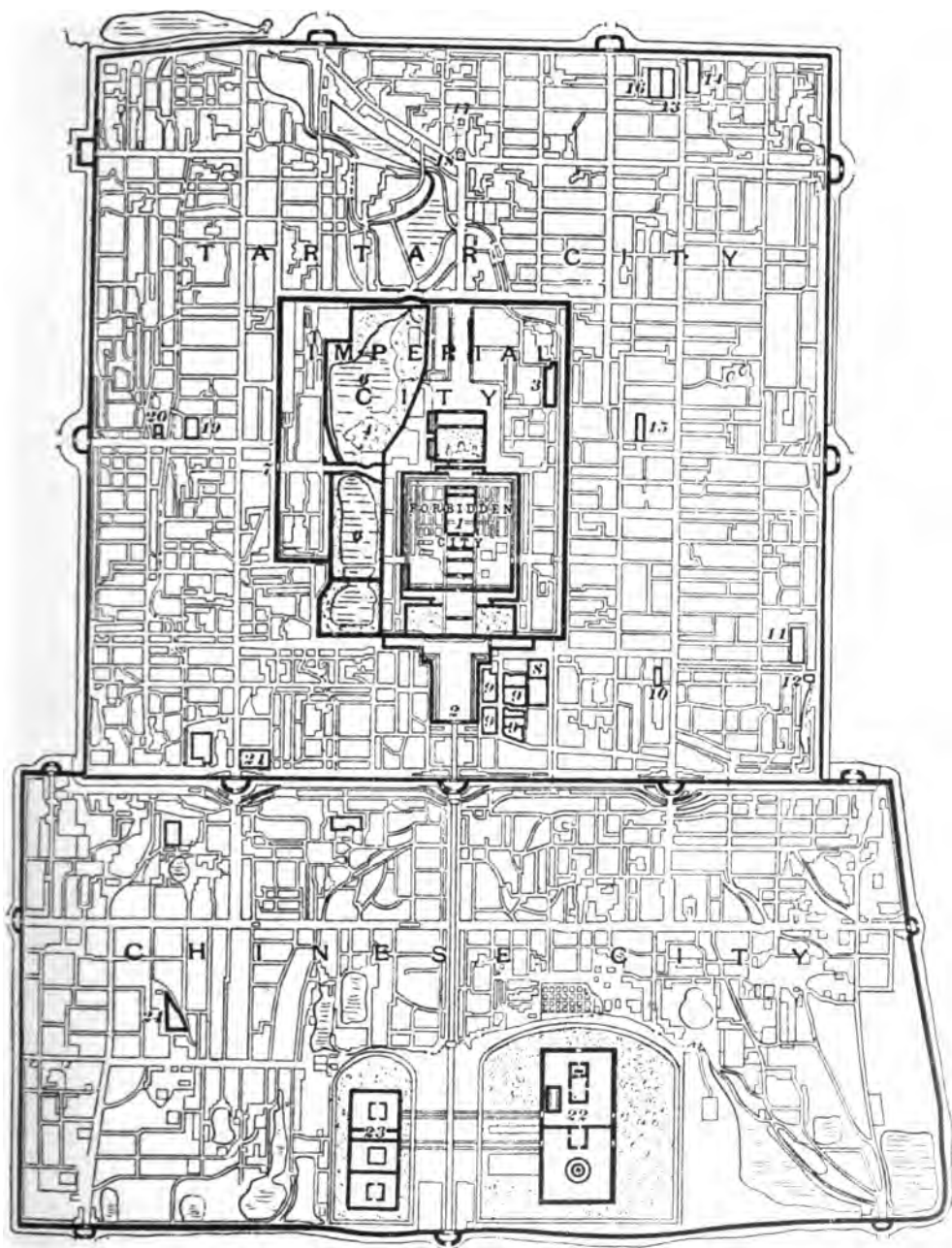
Chifu, a treaty port in the province of Shantung at the mouth of the Gulf of Chili, has an estimated population of 35,000, of whom about 400 are missionaries. Of the latter number more than one-half are missionaries, who, before the outbreak of 1900, though claiming a residence in Chifu, lived inland. The port was opened to foreign commerce in 1863. The Chinese name of the city is Yen-tai, Chifu proper being on the opposite side of the harbor.

Weihaiwei, a port of about 4000 inhabitants, a little to the east of Chifu in the province of Shantung, is under the authority of the British, by whom it is used as a naval station. The distance across the mouth of the Gulf of Chili to Port Arthur is about 115 miles and the distance southwest to the German port of Kiau-chou is about the same. Formerly Weihaiwei was a fortified Chinese naval station. It was captured by the Japanese in January, 1895. On July 1, 1898, the port was leased by Great Britain as an offset to the concessions granted to Russia in the southern part of the Liaotung Peninsula; the British took possession for as long a time as the Russians should occupy Port Arthur. The harbor is about 18 miles in circumference, and, being sheltered to the northward by the small island of Liukungtao, has two entrances, of which the easterly one is closed to vessels of more than 19 feet draught. Unlike Taku, where the land is extremely flat, Weihaiwei is surrounded by picturesque hills, some of which are 1500 feet or more in height.

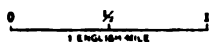
Kiao-chau, a port on the Yellow Sea, in the province of Shantung, was seized by the Germans in November, 1897, in retaliation for the murder of two German missionaries, and in the following March the town, harbor, and district were leased for a period of 99 years. Although Kiao-chau was declared a free port in September, 1898, a branch of the Chinese customs is permitted to levy duties on the trade with Chinese ports. Before the outbreaks of 1900 Kiao-chau gave promise of becoming a great commercial centre and concessions had been granted for two lines of railway running into the interior.

Shanghai, the most important Chinese commercial city, is situated in the province of Kiangsu at the junction of the Woosung and Hwang-fu rivers twelve miles above their embouchure into the southern estuary of the Yangtse-kiang, at the town of Woosung. The estimated population is 586,000; its foreign population is larger than that of any other Chinese city. The surrounding country is level, fertile, and densely inhabited, there being perhaps 800 persons to the square mile. The depth of water on the bar at the newly opened treaty port of Woosung is rarely more than 19 feet. As the bar causes heavy losses to ship-owners and merchants by the detention of ocean steamers, attempts to remedy the evil by dredging the channel have been made, but have proved ineffective.

Canton, a treaty port with perhaps 2,500,000 inhabitants, situated on the Chu-kiang,



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PLAN OF THE CITY OF PEKING.

- | | | |
|-------------------------------|---|--------------------------------|
| 1 Imperial Palace. | 10 Temple of Glorious Devotion | 17 Clock Tower |
| 2 Gate of Great Purity | 11 Examining College | 18 Drum Tower |
| 3 Buddhist Monastery | 12 Observatory Tower | 19 Temple of Ancient Dynasties |
| 4 Monastery of Eternal Repose | 13 Monastery of Lung-fu-tse | 20 Pe-ta-tse |
| 5 Marble Bridge | 14 Great Buddhist Monastery of Yung-ho-kung | 21 Catholic Church |
| 6 The Golden Lake | 15 Temple of Confucius | 22 Temple of Heaven |
| 7 The Gate of Heaven | 16 Imperial University | 23 Altar of the Earth |
| 8 Academy of Han-Lin | | 24 Buddhist Monastery |
| 9 The Legations | | |

or Pearl River, about 95 miles from Hong Kong. It is the capital of Kwangtung Province, and is the residence of the viceroy of Kwangtung and Kwang-si. The city proper is surrounded by a wall some 6 miles in circumference, about 20 feet thick, and from 25 to 40 feet high. The city has sixteen gates and two water gates. Outside the walls the suburbs are built up for several miles. There is regular and frequent steamer communication with Macao, Hong Kong, and Shanghai. Canton was connected by an overland telegraph with Kaulun in 1883, and with Lungchou-fu in 1884. A preliminary survey for a railroad from Canton to Kaulun has been made, and the project has been approved by the emperor. During 1899 a survey of a railroad from Canton to Hankow was made for an American syndicate.

Suchow, the capital of the province of Kiangsu, has an estimated population of half a million, and is situated about 80 miles northwest of Shanghai, with which it is connected by inland waterways. It is near the southern section of the Grand Canal, and not far from the eastern shore of the great Taihu Lake. The city has important manufactures, including silk and satin embroideries and other fabrics of silk, linen, and cotton. According to the Japanese treaty, Suchow has been an open port to foreign trade since September, 1896. The recovery of Suchow from the Chinese rebels by General (then Major) Gordon in November, 1863, was the first effective blow to the Taiping rebellion.

Chinkiang, a city of about 140,000 inhabitants in the province of Kiangsu, lies on the right bank of the Yangtse where the Grand Canal enters the river. The city is enclosed by walls and defended by batteries that command the river approaches. The foreign settlement, which has small Protestant and Roman Catholic churches, occupies a strip of land extending from the Canal along the Yangtse. About half of the foreign buildings were destroyed by a native mob on February 5, 1889. Chinkiang was opened to foreign trade in pursuance of the treaty of Tientsin.

Nanking, a city of perhaps 250,000 inhabitants, is situated on the right bank of the Yangtse 205 miles from Shanghai and 45 miles west of Chinkiang. It is enclosed by a wall 22 miles in circumference, varying from 40 to 90 in height and from 20 to 40 feet in thickness. Much of the city's ancient greatness has passed away, and within the walls are large areas of cultivated land or wilderness. There are some manufactures of importance. In 1890 the naval college, with 9 native and 3 foreign instructors, was opened. The recapture of Nanking from the rebels in July, 1864, proved to be the fatal blow to the Taiping rebellion. In the French treaty of 1858 Nanking was named as one of the ports to be opened to trade, but the formal opening did not occur until May, 1899.

Wuhu, a city with upward of 80,000 inhabitants, is situated on the Yangtse in the province of An-hwai. Pursuant to the Chifu convention it was opened to foreign trade on April 1, 1877. The location of Wuhu is very favorable for trade, since in addition to the river it has excellent canal connections with other parts of the interior.

Kiukiang, a town with an estimated population of 55,000, is situated on the Yangtse near the outlet of Poyang Lake in the province of Kiangsi, nearly 200 miles from Hankow and 450 miles from Shanghai. The walls, which are about five miles in circumference, surround a certain amount of unoccupied land, for during the Taiping rebellion the city was almost entirely destroyed. Kiukiang is favorably situated for trade with the green-tea districts. In 1899 a Roman Catholic cathedral and a Protestant church were opened.

Hankow, with an estimated population of 800,000, lies at the junction of the Yangtse-kiang and the Han-kiang rivers, in the province of Hupe, and is about 600 miles from Shanghai. The city is surrounded by walls built at the time of the Taiping rebellion. Cotton cloth mills were established in 1892. A trunk-line railway from Peking to Hankow, by way of Pao-ting-fu, has been projected, and the contract in 1897 was let to a Belgian syndicate. Hankow was opened to foreign trade in 1861.

Ichang, with an estimated population of 34,000, is a port on the north bank of the Yangtse in the province of Hupe, 393 miles above Hankow and nearly 1000 miles from Shanghai. For vessels of light draft the navigation of the river is comparatively easy to this port, which was opened to foreign trade in April, 1877, pursuant to an agreement of the Chifu convention.

Fuchau, the capital of Fokien Province, having an estimated population of 650,000, lies in a plain on the north side of the Min River about 34 miles from its mouth. A part of the city is protected by walls about 30 feet high, 12 feet wide at the top and 6 or 7 miles long. The shallowness of the river compels vessels, excepting those of very light draft, to anchor at Pagoda Island, about 9 miles below the city. Near this anchorage is the Mamoi arsenal, a large government establishment, which was bombarded by the French in August, 1884, but which was subsequently restored and has been to some extent reorganized and managed by French experts.

Amoy, a treaty port with about 96,000 inhabitants, is situated on Haimun, an island

of Fokien, some 40 miles in circumference, at the mouth of the Pei-chi River. The inhabitants of the entire island probably number about 400,000. The city is a comparatively good trade centre, and there is fairly regular steamer communication with Fuchau, Swatow, Hong Kong, Manila, and Singapore.

CHING, PRINCE, was one of the four Chinese peace commissioners appointed by imperial edict to negotiate with the envoys of the foreign Powers subsequent to the Boxer uprising of June, 1900. During the siege of the legations at Peking, Prince Ching, in command of imperial troops, was credited to some extent with defending the legations from the Boxers under Prince Tuan and General Tung-Fu-hsiang. Prince Ching, who is now about 60 years of age, represents the more enlightened of the Chinese. For many years he was president of the Tsung-li Yamen, and was only recently succeeded by the reactionary Prince Tuan. In this capacity Prince Ching won a reputation for courtesy and the credit for exerting his influence against the violent conduct of his colleagues, but his position allowed him little real power. In 1891 he became president of the admiralty board. At the time of the Japanese War he was commander-in-chief of the Peking army, but he had no opportunity to lead his troops against the enemy. In 1896 an imperial decree raised him from prince of the second to prince of the first order.

CHIN KIANG. See **CHINESE EMPIRE** (paragraph on Cities).

CHITTENDEN, LUCIUS EUGENE, a New York lawyer and man of letters, who died July 22, 1900, was a great-grandson of Thomas Chittenden, first governor of Vermont. He was born at Williston, Vt., in 1824, and met with success in the practice of law before figuring in politics in the anti-slavery cause and free-soil movement. He was one of the early members of the Republican party, and a delegate to the famous Peace Conference of 1861. His association then with Salmon P. Chase brought about Mr. Chittenden's appointment as register when Mr. Chase was secretary of the treasury. During the four years of his office Mr. Chittenden formed a warm friendship with Lincoln, and afterward published the interesting *Recollections of Lincoln and His Administration* (1891). He also published *Personal Recollections 1840-90* (1893), and the *Speeches, Addresses and Letters of Abraham Lincoln*. A man of scholarly tastes, he belonged to the Grolier Club and the leading historical societies, and had a most valuable library, which included a collection of papers on the early history of Vermont, afterward purchased by the University of Vermont.

CHOLERA. During the fall and winter of 1900 cholera prevailed in Afghanistan to such a degree as to alarm the Russian representatives into urging the establishment of a sanitary cordon on the frontier. A serious epidemic of the disease prevailed in Japan during the same time. The outbreak of the disease in India is one of the worst on record. In September the natives died of it at the rate of 3000 a week. In Kashmir the mortality during the 1900 epidemic was about 56 per cent. See **INDIA**; **SERUM THERAPY**, and **VITAL STATISTICS**.

CHOLMONDELEY, MISS MARY, English author, whose novel *Red Pottage* was one of the successes of the year, belongs to the younger branch of the Marquis of Cholmondeley's family. She is the daughter of the Rev. R. H. Cholmondeley, of Hodnet Rectory. Here Miss Cholmondeley was born and received her education through reading the old English classics. She wrote her first three books, *The Danvers Jewels*, *Sir Charles Danvers*, and *Diana Tempest*, in spite of poor health and many household duties. These and still further points of resemblance between her own life and that of Hester West show that the description of this character in *Red Pottage* is more or less autobiographical. The appearance of *Diana Tempest* created considerable comment in England, and it is a question whether *Red Pottage*, in spite of its great popularity, shows any increase in literary power. It is a satire of English society life written in a bold, fluent style. The story lacks form and is full of incongruity and exaggeration. Miss Cholmondeley has, however, a faculty for creating dramatic situations and describing character in witty paradoxes. Mr. Gresley, the bigoted vicar, is one of the widely discussed creations of modern fiction.

CHRISTIAN CATHOLICS (DOWIE), a sect of comparatively recent appearance, composed of the followers of John Alexander Dowie, the apostle of "divine healing." Accessions of members and wealth have so encouraged the apostle that he has already entered upon plans for the establishment of a co-operative community on the shores of Lake Michigan. This city of New Zion, according to the prophecies of the founders, is to be the capital of the coming kingdom of God and will surpass every temporal city in the world. The Christian Catholics report a membership of 40,000, with 55 ministers and 50 churches.

CHRISTIAN ENDEAVOR, UNITED SOCIETY OF, founded in Portland, Me., in 1881 for the training of young people for the duties of church membership. At the close of 1900 there was a worldwide enrolment of 60,770 societies, with a

membership of 3,646,200. Membership is distributed in all evangelical denominations. The United Society is a bureau of information for all the individual societies. President, Rev. Francis E. Clark, D.D., the founder of the society; general secretary, John Willis Baer. An international convention is to be held in Cincinnati, O., July 6-10, 1901.

CHRISTIANS, a religious sect of the United States, originated in the early years of the nineteenth century. The two divisions, Christian Connection and Christian Church (South), which withdrew during the slavery agitation, have recently been united, and at present show a membership of 111,835 members, with 1248 ministers and 1520 churches. In church polity the Christians are practically congregational, while in doctrine they allow great freedom, basing their rule of faith on individual interpretation of the Bible. They have exhibited considerable activity along missionary and educational lines, and now control a number of well-equipped institutions of learning.

CHRISTIAN SCIENCE, a term used to denote the beliefs of the members and adherents of the Church of Christ, Scientist, founded in 1866 by Mrs. Mary Baker G. Eddy. This sect reports an increase in membership in all parts of America, including Canada and Alaska; also in many countries of Europe, in South Africa, Australia, the Philippine Islands, Cuba, and Japan. The main tenet of the Christian Scientists that distinguishes them from Christians of other denominations is the healing of disease through acquiring faith in the unreality of disease, or, as disease is called, "error." This has up to the present time led them to refuse to sufferers the aid of medicines, the result being that the regular medical profession has strongly protested against the dangers likely to follow from the refusal of the Christian Science healers to report, or their inability even to diagnose, zymotic diseases. It is, however, noteworthy that Mrs. Eddy authorized the following statement: "Rather than quarrel over vaccination, I recommend that if the law demand an individual to submit to this process he obey the law and then appeal to the Gospel to save him from any bad results. Whatever changes belong to this century or any epoch we may safely submit to the providence of God, to common justice, to individual rights and governmental usages. This statement should be so interpreted as to apply on the basis of Christian Science to the reporting of contagion to the proper authorities, when the law so requires." Much attention was called to the Christian Scientists of New York City in 1900 by the contest over the will of Miss Helen C. Brush, who died in that year, leaving about \$100,000 to the First Church of Christ, Scientist. Two sisters of Miss Brush, to whom was bequeathed \$1000 each, contested the will on the ground that undue influence was brought to bear on the deceased by the Christian Scientists. Dr. Austin Flint, the well-known physician, testified that a belief in Christian Science will not alone be enough to prove the mind of the testatrix unsound. Attempts at legislation against the Christian Scientists were unsuccessful, as the unconstitutionality of laws compelling any one to call in a physician of one school in preference to any other was seen to apply to Christian Science healing as well. In 1900 there were 444 churches, 42 more than in the preceding year; 285 public Christian Science reading-rooms, showing an increase of 183 during 1900; and 76 chartered educational institutions in the United States and Canada, an increase of 14. The total number of members enrolled was 100,000 in 1900 and the avowed adherents are estimated to be 500,000. The *Christian Science Journal* (monthly) and the *Christian Science Sentinel* (weekly) are published under the auspices of the church. The text-book of this sect, *Science and Health, with a Key to the Scriptures*, passed through its two hundredth edition in 1900. The following books on Christian Science appeared in the United States in 1900: A. O. Garrison, *Christian Science Dissected* (St. Louis); W. P. McCorkle, *Christian Science* (Richmond, Va.); W. A. Purrington, *Christian Science, an Exposition of Mrs. Eddy's Wonderful Discovery, Including its Legal Aspects; A Plea for Children and Other Helpless Sick* (New York), and Mrs. A. D. T. Whitney, *The Integrity of Christian Science* (New York).

CHRISTIAN SCIENCE (REFORMED). See REFORM CHRISTIAN SCIENCE CHURCH ASSOCIATION.

CHRISTIAN VICTOR, PRINCE, of SCHLESWIG-HOLSTEIN, the son of Prince and Princess Christian and grandson of Queen Victoria, died at Pretoria, October 24, 1900, at the age of 33. His military career included service in the Soudan expedition under Lord Kitchener in 1898 as staff officer to the troops on board the gunboat flotilla. For his part in the bombardment of Omdurman and the battle which crushed the power of the Khalifa he received high honors. He had lately been gazetted for special service on the staff of Lord Roberts in South Africa.

CHROMIC IRON ORE. According to the report of the United States Geological Survey, none of this material was mined in the United States in 1899 or in 1898. *The Mineral Industry*, however, gives the production for 1899 at 100 long tons,

valued at \$1000 and coming from the Pennsylvania mines, there being no output from the mines of California. Chrome ore is also mined in Canada and is shipped to the United States, where it is used in the manufacture of armor-plate, the output in 1899 from the Colrairie Mines amounting to 1768 gross tons, valued at the mines at \$20,867. Chromite also occurs in North Carolina, but there has never been any systematic prospecting and development of the localities where it has been found.

CHURCH, FREDERIC EDWIN, a distinguished American landscape painter, died April 7, 1900. He was born at Hartford, Conn., May 4, 1826. After studying under Thomas Cole he established a studio in New York, and in 1849 became a member of the National Academy of Design. His reputation was established by his large canvas, "The Heart of the Andes." Soon afterward he produced another large painting, "The Great Fall, Niagara," for which he received a medal at the Paris Exposition of 1867, and which is now in the Corcoran Gallery at Washington. Among his later works are "On the Cordilleras;" "Morning;" "The Icebergs;" "Under Niagara;" "Moonlight Under the Tropics;" and "Sunset on Mount Desert Island." His "Cotopaxi," a notable painting, is in the Lenox Library, New York.

CHURCHILL, JOHN WESLEY, A.M., D.D., professor of homiletics and pulpit oratory at Andover Theological Seminary, died at Andover, Mass., April 13, 1900. He was born at Fairlee, Vt., May 26, 1839, and graduated at Harvard College in 1865 and at Andover Theological Seminary in 1868. Soon after he was called to the latter institution as an instructor, and up to the time of his death was associated in the work there and at Abbott Academy, Andover. He was widely known as an elocutionist and reader, and had given instruction in elocution at various institutions, including Smith College, Harvard Divinity School, Dartmouth College, and Mount Holyoke Seminary. From 1884 to 1894 he was one of the editors of the *Andover Review*.

CHURCHILL, WINSTON LEONARD SPENCER, son of the Right Hon. Lord Randolph Churchill, was born on November 30, 1874. He was educated at Harrow and Sandhurst, and entered the army in 1895, serving in that year with the Spanish forces in Cuba and receiving the Order of Military Merit. In 1897 he served with the Thirty-first Punjab Infantry, and was mentioned in despatches and received a medal with clasp for his actions in Bajaur. He also served as orderly officer to Sir W. Lockhart with the Tirah expeditionary force in 1898, and was with the Twenty-first Lancers in the Nile expeditionary force, again receiving a medal with clasp for his services at the battle of Khartoum. In 1899 he was the Conservative candidate for Parliament for Oldham, but was unsuccessful, and on the outbreak of war went to the Transvaal. On November 15 he was taken prisoner by the Boers, being captured with others in an armored train near Estcourt, while acting as correspondent for the *Morning Post*. He was taken to Pretoria, but escaped later in the year. During his captivity he became impressed with the strength of the Boer resistance, and his prophecy that England would need 250,000 soldiers to conquer the republics proved true. In January, 1900, he was made commander of a squadron of South African Horse. Late in the year he came to the United States and lectured on his adventures among the Boers. In September, 1900, he was elected Conservative member of Parliament for Oldham. He has written *The Story of the Malakand Field Force* (1898); *The River War* (1899); *Savrola* (1900); *London to Ladysmith via Pretoria* (1900); *Ian Hamilton's March* (1900).

CHURCH OF CHRIST, SCIENTIST. See CHRISTIAN SCIENCE.

CHURCH OF IRELAND. See IRELAND, CHURCH OF.

CINCINNATI, SOCIETY OF THE, founded by Washington and his officers in 1783, "to perpetuate as well the remembrance of this vast event (the Revolutionary War) as the mutual friendships which have been formed under the pressure of common danger," etc., is composed of the general society and the State societies. The next triennial meeting of the general society will be held in Hartford, Conn., in May, 1902. President-general, Hon. William Wayne, Pennsylvania; secretary-general, Hon. Asa Bird Gardiner, Rhode Island. Offices, Garden City, L. I. There are State societies in active membership in Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Maryland, South Carolina, and Virginia. General Washington was the first president-general, and served till his death, when he was succeeded by Alexander Hamilton. The Cincinnati is a military society, recognized by Congress, and not merely a patriotic or benevolent association.

CIVIL ENGINEERS, AMERICAN SOCIETY OF, founded 1852. Membership, December 31, 1900, 2337. Annual convention of 1901 to be held at Niagara Falls the last week in June. House, 220 West Fifty-seventh Street, New York City; contains engineering library of 35,000 volumes. The society publications are *Proceedings* (ten issues per year) and semi-annual volumes of *Transactions*. President, E. E. Olcott; secretary, Rossiter W. Raymond.

CIVIL SERVICE REFORM LEAGUE, NATIONAL, consists of such civil service reform associations in the United States as care to become members. The annual meeting was held in New York City, December 13 and 14, 1900, and Dr. Daniel C. Gilman was elected president, succeeding Carl Schurz, who earlier in the year had retired from the presidency on the ground that his active opposition to the McKinley administration during the campaign of 1900 might react unfavorably on the league. Mr. Schurz had been president of the league for eight years, being the successor of George William Curtis, its first president. The most important report presented at the meeting was that of an investigating committee "On the Condition of the Civil Service under the Present National Administration." It reported that from 1883 until May 29, 1899, the provisions of the National Civil Service act had constantly been extended, each President making important additions to the classified service. Since that date, however, "conspicuous and unusual opportunities for its extension have deliberately been set aside," and it was stated that instances had occurred in which "war emergency" appointments were made without drawing upon the 6180 eligible clerks on the lists of the National Civil Service Commission, while in making census appointments the merit system was not employed. The report points out that the President's order of May 29, 1899, had removed about 5000 places from the competitive to an "excepted" list, and 2000 more from the classified to the unclassified service; that it validated, nominally, many appointments previously made in violation of the law; that it weakened the rules governing transfers, reinstatements, and removals, so as to permit new and most serious abuses; and that it marked the first great reduction in the actual extent of the merit system since the act of 1883 was passed. (For a brief statement of the administration's position in this matter, see the article **McKINLEY, WILLIAM**.) The committee on the civil service in the dependencies reported with gratification that there had been an apparent recognition of the evils of a "carpet-bag" system in the establishment by the Philippine Commission of a Civil Service Board for the Philippines. But as yet no appointments have been made under this board. The committee on superannuation in the civil service reported favoring a scheme for the collecting of a fund by means of a required life insurance on the deferred annuity plan. The officers for the year 1900-01 include the president, D. C. Gilman, LL.D., Baltimore, and secretary, George McAneny, 54 William Street, New York City.

CLARK, JONAS GILMAN, founder of Clark University, at Worcester, Mass., died in Worcester, May 23, 1900. He was born at Hubbardston, Mass., February 1, 1815; was educated in the public schools, and then learned the trade of carriage-making. In 1853 he went to California, where he met with considerable success, and returning to New York five years later, entered the banking business and amassed a large fortune. He became greatly interested in university development, and after studying the conditions in the work of higher education in Europe, determined to found in America an institution the purpose of which was, as he expressed it, "to increase human knowledge and transmit the perfect culture of one generation to the ablest youth of the next; to afford the highest education and opportunity of original research." Accordingly he formed a board of eight trustees, graduates of Harvard, Dartmouth, Bowdoin, and Amherst, and having secured a charter in 1887, founded Clark University two years later with an endowment fund of \$2,000,000. The student body of this university has always been small, but very advanced work, particularly in psychology and biology, has been done. Upon Clark's death the institution received his library of rare and costly books.

CLARK, WILLIAM ANDREWS. See **MONTANA** (paragraph Clark).

CLARKE, FRANK WIGGLESWORTH, chief chemist of the United States Geological Survey, was elected president of the American Chemical Society at the annual meeting of the society in 1900. Professor Clarke was born in Boston, March 19, 1847, and graduated from the Lawrence Scientific School at Harvard in 1867. He became instructor in chemistry at Cornell University in 1869, and professor of Chemistry in Howard University, Washington, in 1873. He occupied the chair of chemistry and physics at the University of Cincinnati from 1874 to 1883, when he became connected with the United States Geological Survey. Professor Clarke is well known among chemists for his studies on atomic weights and other researches. He is the author of *Weights, Measures and Money of All Nations; Elements of Chemistry* (1884); *Constants of Nature* (1873, 1876, and 1882); besides a large number of papers contributed to the various chemical and scientific journals. He has been chairman of the section of chemistry of the American Association for the Advancement of Science, and president of the Washington Chemical Society.

CLARKE, General GEORGE CALVERT, British military officer, retired, died February 9, 1900, at Uckfield. Born in London, July 23, 1814, he was educated at Eton and Sandhurst. He served in the Crimean War with the Scots Greys, and took part in the battles of Balaclava, Inkerman, and Tchernaya, and was present at the

siege and fall of Sebastopol. For his meritorious services he was the recipient of various decorations and other honors.

CLARK UNIVERSITY, Worcester, Mass., opened in 1889, admits, as a rule, graduate students only, and aims to supplement the work of other collegiate institutions by offering special opportunities for research in mathematics, physics, biology, psychology, and education. The library contains about 17,500 books, and 1500 pamphlets, bearing chiefly on the five departments; and all students have free access to the shelves. In addition, the American Antiquarian Society library and the Worcester Public Library, 100,000 volumes each, are freely accessible to students, and the facilities of the latter institution for borrowing from distant libraries are also available. There is, in addition, a system of exchange between the Clark and Harvard libraries. A summer school is held annually, and special Saturday courses for teachers are given during the academic years. About forty-five fellows and scholars were pursuing advanced work during 1899-1900. A limited edition of the *Clark University Decennial Volume* has been issued; the most notable portion of its contents is the 14 scientific lectures delivered at the decennial celebration by Émile Picard, of the University of Paris; Ludwig Boltzmann, of the University of Vienna; Santiago Ramón, of Cajal, University of Madrid; Angelo Mosso, University of Turin; and August Forel, late of University of Zürich, and director of the Burghölzli Asylum. The publications connected with the University are the *American Journal of Psychology*, *Pedagogical Seminary*, and *Mathematical Review*. In 1900 Jonas G. Clark (q.v.) died. He was the founder of the University, and endowed it to the amount of \$2,000,000. See **PSYCHOLOGY, EXPERIMENTAL**; and **UNIVERSITIES AND COLLEGES**.

CLAY. The production of brick clay during the year 1899 amounted to \$11,250,000, according to the statistical report of the United States Geological Survey, as compared with \$9,000,000 in 1898. The value of all other clay than brick is given at \$1,250,000 as compared with \$1,000,000 in 1898. According to *The Mineral Industry*, the year 1899 was one of the most successful ever experienced in the clay industry, and the production of brick and clay wares was largely in excess of that for 1898. The statistics of production, as collected by this authority, are given below:

Kind.	1898.			1899.		
	Number of thousand.	Value.	Per thousand.	Number of thousand.	Value.	Per thousand.
Common brick.....	5,186,333	\$36,325,636	\$5.06	7,172,333	\$67,642,106	\$5.85
Front brick.....	401,691	4,158,067	10.85	386,448	3,261,717	8.49
Fire brick (a).....	345,291	4,167,103	12.07	363,427	5,345,730	14.71
Paving and vitrified brick.....	571,542	4,635,736	8.11	653,005	5,687,571	8.63
Other clay building material (b).....	.....	5,439,914	.....	.....	5,714,734	.....
Sewer pipe and drain tile.....	.....	7,493,428	.....	.....	(d) 8,942,771	.....
Crude clay, stoneware, and miscellaneous manufactures (c).....	.....	(d) 7,250,000	.....	.....	(d) 8,200,000	.....

(a) Not including silica brick.

(b) Including terra-cotta lumber, hollow building tile or blocks, roofing tile, floor tile, and all other clay building material.

(c) Including value of common stoneware and various miscellaneous clay manufactures and crude clay used in pottery, for laying fire brick, in paper making, as burnt clay railway ballast, for the manufacture of glass pots, zinc retorts, etc.

(d) Estimated. Gas retorts

CLIMATOLOGICAL ASSOCIATION, AMERICAN, held its seventeenth annual meeting in Washington on May 1-3, 1900, in connection with the fifth triennial Congress of American Physicians and Surgeons. The president was Dr. Abraham Jacobi, of New York. The *Transactions* of the association, numbering seventeen volumes, contain many valuable papers on diseases of the heart and lungs and the application of climate to their treatment. The various health resorts and mineral springs have been described in these volumes, which can be obtained from the secretary, Dr. Guy Hinsdale, 3943 Chestnut Street, Philadelphia. The next annual meeting, under the presidency of Dr. R. H. Babcock, of Chicago, will be held at Niagara Falls, May 30-June 1, 1901.

CLUSERET, GUSTAVE PAUL, a French military adventurer and general in the Commune, died at Hyères, August 22, 1900. He was born at Paris in 1823, the son of an officer of the first empire, and after finishing his studies at St. Cyr in 1843, was appointed lieutenant in the army. With his company of grenadiers he took part in the revolution of February, 1848, and during the June days, as chief of a battal-

ion of National Guards, won the ribbon of the Legion of Honor. He fought in the Crimean War, and later in Africa, but not receiving from Napoleon III. what he considered a fitting reward for his bravery, he retired from the army. In 1860 he was lieutenant-colonel in Garibaldi's forces, and then becoming interested in the abolition cause, went to the United States, where he served on McClellan's staff with the rank of colonel. After the close of the war, Cluseret established a newspaper for the support of Fremont *versus* Grant, but his elastic principles involved him in some business troubles, which forced him from the country. Soon after he was deep in the Fenian agitation in Ireland. He escaped to Paris, but was soon expelled from the country for tampering with the *sous-officiers* of the garrison. Again Cluseret fled to America, but returned to Paris during the Provisional Government of 1870. For a time he was at the head of the military operations of the Paris Commune, but with other officers he fell under suspicion and was imprisoned. Escaping from prison, he left France with a sentence of death hanging over him. He devoted himself to art, and under the amnesty of 1881 he went back to Paris, and there exhibited his paintings. Six years later his *Memoirs* appeared, giving an account of the Commune and ridiculing his associates. In 1888 he was elected radical deputy for the Var, and after 1889 was elected from Toulon. He was a failure in the Chamber, and he ended his singular career by joining the *Anti-Dreyfus Patrie Française League*.

COAL. The production of bituminous coal in the United States in 1899 amounted to 193,321,987 short tons, valued at \$167,935,304, while that of anthracite was 53,944,647 long tons, valued at \$88,142,130. This amount was not only the largest quantity ever produced by the United States in a single year, but also exceeds the annual production of any country in the world. The first place among coal-producing countries so long held by Great Britain is consequently taken by the United States, and all conditions, both geological and economic, point to its being maintained for many years. It has been estimated that the total production of the United States for 1900 was more than 270,000,000 short tons, while that of England probably did not exceed 225,000,000 long tons. The causes for this decrease in the English product during the year 1900 are, doubtless, the war in South Africa and the increasing competition of American coal. The condition of the coal-mining industry in the United States during the year 1899 is discussed in a report published by the Bureau of Statistics of the Treasury Department, April, 1900, which also contains a statement of its relation to foreign countries and the statistics for the entire world. Considering the American export trade, we find that in 1899 steamers were chartered to carry coal from the United States to various Italian and German ports, as well as to St. Petersburg and Stockholm. This was made possible by the wonderful increase in the coal production of the United States, but at the same time an increased output has characterized the world's production generally. The total coal production of the world in 1896 was 664,000,000 short tons, or 604,000,000 long tons, while until as late a year as 1878 the world's production had never been 50 per cent. of this amount, being in that year 292,000,000 metric tons (2204.6 pounds to the metric ton). In 1868 it was only 30 per cent. of the production in 1896, while in 1864 it was only 29 per cent. of that amount. Going back still further, it is found that in 1856 the production of the world was about 83,000,000 metric tons, or 2-15 of the present world's production and considerably less than the present yearly yield of the State of Pennsylvania. In order to emphasize the point still more, it has been computed that since 1820, when the output was but 17,000,000 metric tons, the production has increased about 3500 per cent. At the present time the United States, the United Kingdom, Germany, Austria-Hungary, France, and Belgium are the most important coal-producing countries. Russia ranks seventh, Japan eighth, New South Wales ninth, India tenth, and Canada eleventh, while among the other coal-producing countries may be mentioned Spain, South Africa, Sweden, and Italy.

Great Britain has always made heavy exports of coal, but France and several European countries, on the other hand, are forced to make large imports, consequently conditions affecting this trade in England have a wide-reaching influence. This was realized in 1899 and 1900, when the continent of Europe was threatened with a coal famine. In 1897 there was a strike among the Welsh coal miners, which materially diminished the British output, while in Germany and other continental countries the activity in various manufacturing industries experienced for several years past has increased the demand for coal. The war in South Africa has also had considerable effect on the coal situation, as not only have vast stores of coal in Great Britain been taken for government use, but the chartering of so many vessels for military transports has seriously affected the export trade with countries dependent upon England for much of their supply.

In view of these conditions, it is therefore not surprising that the United States, with its almost inexhaustible supply of mineral fuel, was looked upon to supply the deficit, and as a result during the past year there have been shipped from the United

States 1,662,286 tons of anthracite coal, valued at \$7,107,412, and 6,255,033 tons of bituminous coal, valued at \$14,416,667, making an aggregate of 7,917,319 tons having a value of \$21,524,079.

United States Supremacy in the Coal Trade.—This scarcity of coal in Europe and its abundance in America gave rise during 1900 to many discussions upon the conditions which insure to the United States the future supremacy of the coal trade. The notable advances recently made by the United States in the iron and steel industries (see IRON AND STEEL) had also a collateral bearing upon these discussions, since it was recognized that cheap and plentiful coal is the prime antecedent necessity to those constructions in iron and steel in which the material and commercial development of a modern country must be mainly expressed. If the United States is already exceeding all other nations in the production and utilization of iron and steel, it may be inferred that her coal is cheaper and more abundant than the coal of any other country. And this may also be independently shown. Since 1879 the yearly production of coal in the United States has increased from 29,900,000 metric tons in that year to 218,000,000 tons in 1908. Great Britain, the only country whose coal production now approaches that of the United States, has increased her yearly coal supply during the same period from 112,200,000 tons to 205,000,000 tons. Germany, the third largest coal-producing country, has increased her production from 34,800,000 to 96,200,000 tons. The per cent. of increase in the three countries is 83 per cent. for England, 176 per cent. for Germany, and 629 per cent. for the United States, while the average annual rate of increase during thirty years was, for Great Britain, 2.33 per cent.; Germany, 4.6 per cent., and for the United States, 6.64 per cent. The occasion for this great coal output by the United States lies mainly in the development of the country's railroads, and in the continued substitution of power for hand labor; but the cause is the accessibility, extent, and surface seams of the American coal lands. The comparatively small coal area of western Europe—estimated as being under 10,000 square miles—has been worked until the upper seams are worked out. The American coal fields on the other hand—with an area of about 50,000 square miles—have been worked so little that in the bituminous coal fields, which produce about 9-11 of the total coal output, coal is hardly ever hoisted, but is run out and down in cars on an inclined track. Several mines in western Europe are over 3000 feet deep; many are from 1000 to 2000 feet. Pumping must here be resorted to for the purpose of keeping the mines clear from water, extra timber must be used for propping, and hoisting apparatus kept running for men and material. Moreover, as the depth of the mines increases the mining itself becomes more difficult on account of the heat, the gas, the irregularity of the coal veins and the hardness of the rock. Besides largely saving these expenses, the thickness of the seams in United States coal mines insures a larger production for less labor. Mr. Edward S. Meade estimates that the width of seams in English coal mines average 3 feet; in Belgium, from 10 inches to 3 feet; in the most important deposits of Westphalia, in Prussia, from 2 feet 6 inches to 3 feet 1 inch. The average thickness of the coal seams on the continent he finds to be from 2½ to 3 feet. From unpublished reports made to the Columbian Exposition it appears that in mines representing over one-half of the coal production of the United States the average thickness of the coal seams is nearly 9 feet. In general, and taking into account the narrower seams of Kansas and Iowa mines, it may be safely assumed that the seams in United States mines are twice the thickness of continental seams. Now, the cost of coal mining decreases directly as the width of the coal seam increases. For coal-cutting machines may be advantageously used in the thicker seams, less rock needs to be cut away, and less handling and blasting is required. In addition to these advantages, America possesses another in the superior facilities which have been established for moving and transporting coal. The mechanical equipment of United States mines is, on the whole, more scientific and economical than that of continental mines; and the railroads leading into Pennsylvania and other mining States carry great trains of forty or fifty 50-ton cars drawn by huge locomotives especially designed for the coal trade. The importance of the last point is noted by Mr. A. D. Provant in the *National Review*: "The actual rates on coals brought to London from Wales and the Midland counties over distances between 100 and 200 miles vary from about one-half to two-thirds of a penny (two cents to an English penny) per ton per mile. . . . Coal is carried from Virginia and Pennsylvania mines for about one-seventh of a penny per mile—that is to say, the rates in the coal States for long hauls exceeding 100 miles are from one-third to one-fourth of what they are in this country. . . . The difference between the American rates and ours are better understood when we say that a 150-mile haul with us would add fully 7s. (about \$1.72) per ton to the cost of the coal, whereas in the United States it would add only about 2s. (\$0.49). Before our railways can rival the American railway in coal carrying they will have to reconstruct the plant engaged in the business." The result of these advantages may be seen in two ways.

From 1872 to 1893, according to Mr. Meade, "the annual output per person in the coal-mining industry of Great Britain decreased from 310 to 275 tons; in France, from 190 to 165; and in Belgium, from 167 to 165. In Germany it increased from 275 to 280 tons, while in the United States it increased from 370 to 540 tons." As reflected in prices, the London Board of Trade reported that in 1899 the mine price of coal per ton was \$2.25 in France, \$2.18 in Belgium, \$1.85 in Germany, \$1.58 in England, and \$1.10 in the United States. The European mines then are fighting, and must increasingly fight, against the law of diminishing returns, and the disparity between the mine price of coal in the United States and on the continent may be expected to become greater instead of less. In view of these facts, and of the further fact that the most expensively mined coal sets the price of the market, it seems evident that within a few years America will export coal to a large amount. The one item which will stand in the way of heavy exportation, however, is that of freight rates. If the United States imported more than it exported the problem would be less difficult of solution, for the reason that ships bringing freight to this country could return with coal as ballast, but unfortunately the reverse is the case, and consequently for the time being it becomes difficult for the United States to compete with England in the exportation of coal. Another difficulty is the remoteness of many of our important coal fields from the Atlantic seaports, although transportation facilities are improving annually, and it has been recently shown that coal of good quality could be sent from Pittsburg and delivered at the coast for the same price as the same grade of English coal could be delivered f. o. b. in England. It has been estimated by a writer in *The Engineering Magazine* that slow-steaming colliers of some 7000 tons burden would be able to unload coal at foreign markets "at rates that would make competition simply impossible." That some such project will be put under way in the near future and on a large scale there seems little reason to doubt. The advantage to be derived therefrom by the American coal industry is not alone the profit which could be gained, but the steadying influence upon the American market and the prevention of a glut in the home supply. It is apparent that with the limited deposits which European countries have as compared with those of the United States, and the increasing demand for coal, Europe before many years will have to draw on foreign countries for its fuel supply.

New Coal Fields.—Although considerable prospecting for new coal fields has been done during the past year, yet most of this work has been without success, and those new deposits which have been located are unfortunately in remote regions, such as Siberia and China. It is well known that the latter country contains large fields of anthracite coal, which at some future date will form an important source of supply for European countries, provided the deposits are taken in hand by a large and well-organized company and worked on an economical basis. Professor Drake, of Tientsin, in a report on the coal fields of the Shan-si province, China, describing more especially those around Tse-chau, states that there is a large quantity of workable coal lying in one bed and averaging not less than 22 feet in thickness. It is worked at one place through a shaft 329 feet deep. Professor Drake estimates that within 150 square miles around Tse-chau there are about 3,000,000,000 metric tons of coal, and this area, he says, represents but a small portion of the ragged edge of the great coal region of the Shan-si district.

In South America a number of good deposits of coal are known, especially in Peru, but it seems hardly likely they will be developed for some time to come. The cities of the Pacific coast still continue to draw upon Australia for a large proportion of their supply, although during the past year the imports of coal from British Columbia have become quite appreciable. Well-known as the Pennsylvania coal fields are, a new one has nevertheless been discovered and operated during the past year. It is located near Bolivar, on the northern border of the Ligonier Valley, and the coal mined in it is found to make coke of an excellent quality.

Anthracite Coal Trade in 1900.—The year 1900 witnessed the practical consolidation in the anthracite coal trade of the United States of the large proprietary interests on the one hand, and of the labor interests on the other. For several years the anthracite railways have had a large interest in the anthracite mines, and this interest has led them to introduce cut-rates for hauling, with but poor results to every one concerned. The movement toward consolidation began in 1898, through the efforts of J. P. Morgan & Company, working in conjunction with the Vanderbilts. Early in 1899 the Vanderbilts were able to retire Mr. Sloan from the presidency of the Delaware, Lackawanna & Western, and that road thereupon became more amenable to persuasions in the matter of a community of coal interests. In the same year the Pennsylvania and the New York Central came to an agreement. Coincidentally many independent coal operators were bought out and the Lehigh Valley road was taken under Mr. Morgan's control. The Pennsylvania Coal Company, which had

been talking of building an independent line to carry its coal to tide water, was in December, 1900, bought out by Mr. Morgan in the interests of the Erie. Further purchases, such as those of collieries, by the Delaware & Hudson, and by the New York, Ontario & Western, practically brought all of the anthracite coal interests under the management of the Morgan and Vanderbilt interests. This will insure a more even production, stable prices, and will tend to act to prevent either a glutting of the market or a shortage in supply. Up to September, 1900, more anthracite was produced than in any previous year. This was especially noteworthy because the winter of 1899 had been a mild one, and there had been less call for anthracite for domestic use, for which it is now principally employed. As a result of the strike (see PENNSYLVANIA) the production fell off 5,500,000 tons in two months, and shipments for the year were only 45,107,486 tons, as against 47,665,203 tons in 1899. It is not probable, however, that the owning interests were seriously affected by this financially. They had on hand a considerable supply, which had been accumulated in anticipation of the strike, and, moreover, a panic took place among the retail dealers and jobbers, which for a time nearly doubled the price of anthracite.

The following statistical table of the coal production of the United States has been prepared by the *Engineering and Mining Journal*, and gives the output by States:

STATES.	1899.			1900.		
	Tons.	Value at Mine.		Tons.	Value at Mine.	
		Total.	Per Ton.		Total.	Per Ton.
Bituminous :						
Alabama	7,494,763	\$7,464,763	\$1.00	9,000,000	\$10,800,000	\$1.20
Alaska*	2,300	12,282	5.34	2,600	14,300	5.50
Arkansas	+193,743	1,233,533	1.35	+190,000	1,330,000	1.40
California	167,161	430,631	2.58	171,106	468,006	2.74
Colorado	4,747,812	8,308,671	1.75	5,436,490	10,872,980	2.00
Georgia	203,775	183,061	0.90	224,190	202,885	0.91
Illinois	+23,434,445	18,443,946	0.78	+25,153,029	22,510,360	0.89
Indiana	6,158,294	5,542,402	0.90	7,061,957	7,061,957	1.00
Indian Territory	+1,404,442	2,106,663	1.50	+1,900,127	2,135,209	1.65
Iowa	4,675,000	5,937,350	1.27	4,908,750	6,412,338	1.31
Kansas	4,096,895	5,124,248	1.25	4,100,000	5,125,000	1.25
Kentucky	4,668,400	3,730,100	0.80	5,000,000	3,879,425	0.78
Maryland	5,080,248	4,318,211	0.85	3,900,000	4,173,000	1.07
Michigan	500,000	720,000	1.44	950,000	1,377,500	1.45
Missouri	+3,191,811	3,582,111	1.12	+2,985,022	3,643,975	1.21
Montana	1,409,882	2,237,968	1.58	1,621,264	2,577,969	1.59
Nebraska†	1,000	3,000	3.00	900	2,500	2.78
New Mexico ‡	+1,004,034	1,495,583	1.49	+1,143,739	1,732,780	1.50
North Carolina	26,994	37,792	1.40	18,000	23,500	1.25
North Dakota *	120,597	120,597	1.00	138,000	138,000	1.00
Ohio	16,695,949	14,191,557	0.85	21,704,733	21,270,638	0.98
Oregon	86,886	232,854	2.68	49,560	133,812	2.70
Pennsylvania	73,086,943	57,722,885	0.79	87,680,331	62,419,511	0.94
Tennessee	3,730,134	3,706,617	0.99	4,000,000	4,400,000	1.10
Texas §	940,632	1,646,068	1.75	1,013,008	1,671,460	1.65
Utah	892,496	1,553,198	1.70	1,281,300	2,448,238	1.91
Virginia	2,111,391	1,372,404	0.65	2,334,235	1,984,151	0.85
Washington †	1,917,607	3,355,812	1.75	2,175,000	4,683,750	2.25
West Virginia	+18,201,189	11,890,773	0.65	+21,158,240	14,165,188	0.67
Wyoming	4,525,207	5,656,509	1.25	4,500,000	5,625,000	1.25
Total bituminous { Short tons .	191,450,350	\$172,301,679	\$0.90	220,562,339	\$224,502,453	\$1.02
Met. tons...	173,688,061	.....	0.99	200,119,966	.....	1.12
Cannel :						
Kentucky	36,630	\$91,597	\$2.50	25,000	\$60,750	\$2.43
Met. tons...	33,239	.....	2.76	22,680	.....	2.68
Anthracite :						
Colorado	59,067	\$162,434	\$2.75	59,244	\$177,732	\$3.00
New Mexico	+45,000	105,000	2.33	+41,595	114,335	2.75
Pennsylvania	60,518,331	103,486,346	1.71	54,154,701	96,936,915	1.79
Total anthracite { Short tons .	60,622,398	\$103,753,780	\$1.71	54,255,540	\$97,229,062	\$1.79
Met. tons ..	54,996,379	.....	1.69	49,230,303	.....	1.67
Grand total coal { Short tons .	252,115,387	\$276,147,056	\$1.10	274,872,779	\$321,792,265	\$1.17
Met. tons ..	228,717,579	.....	1.21	249,362,949	.....	1.29

* All lignite.

† Fiscal year.

‡ One-half lignite.

§ One-third lignite.

COAL SMOKE. See SANITATION.

COBALT. In 1899 there was produced in the United States 10,230 pounds of cobalt oxide, with a value of \$18,512, as compared with 7848 pounds, valued at \$11,772 in 1898. This product was obtained from the Mine La Motte in Missouri. The output for 1900 is estimated at 11,200 pounds, valued at \$20,160. The imports of cobalt for the year ending June 30, 1899, amounted to 9786 pounds, valued at \$10,986, the material coming from Germany and Great Britain.

COCAINE HABIT. The alarming increase of the cocaine habit among the negroes of the South caused an ordinance to be passed in July, 1900, by the city council of Huntsville, Ala., prohibiting the sale of cocaine and the refilling of prescriptions calling for cocaine. In New Orleans there is also an ordinance on this subject, and an order was issued to the police of that city by their chief early in December, 1900, containing the following words: "The constant use of cocaine has assumed large and serious proportions and is daily increasing to such an extent as to be a menace to public health. You are directed to notify the force under your command to use extreme diligence in enforcing the city ordinance against the use of cocaine and to make arrests. This menace is general throughout the city. This order must be strictly adhered to, and you will make written reports to this office of each offender arrested and from whom the drug was purchased, whether from a druggist or pedler."

COCHIN-CHINA, a name applied—formerly more than at present—to the eastern part of the Indo-Chinese peninsula, and loosely identified with the former empire of Anam, covering, accordingly, Tonquin, Anam, the French colony of Cochinchina, and part of Cambodia. (See **INDO-CHINA**; **ANAM**; **TONQUIN**; and **CAMBODIA**.) Properly speaking, Cochinchina comprises what is commonly called French, or Lower, Cochinchina, a French colony occupying the southern extremity of the Indo-Chinese peninsula. It consists of 4 provinces, subdivided into 20 districts, the total area of which is estimated at 23,160 square miles, and the total population (1899) at 2,323,500. Another estimate places the number of inhabitants at 2,400,000. Over 2,000,000 are Anamites, 183,000 Cambodians, 65,000 Chinese, while Malays, Mois, Chams, Indians, and Europeans (mostly French) are represented in smaller numbers. The last named number about 4500. The capital and chief town is the port Saigon, with about 50,000 inhabitants. The colony is administered by a lieutenant-governor, representing the government of Indo-China, whose superior council determines the colony's budget. Cochinchina is represented by one deputy in the French Chamber. The French army of occupation, not included in the foregoing enumeration, numbers about 1800 men; in addition there are some 2400 native troops. There are over 230 schools, having about 1180 native and 115 European teachers and 28,000 pupils. The Roman Catholic inhabitants number nearly 75,000, and the Buddhists about 1,688,000. For some years the development of the colony under French rule has been successfully carried on, about one-sixth of the total area being under cultivation. The most important product is rice, which is exported to China, Japan, and Europe; other products are fish, cotton, isinglass, hides, pepper, and coffee. Most of the foreign commerce of Cambodia passes through Cochinchina, and the trade statistics of the two countries are combined. On this basis the exports in 1898 amounted in value to 108,010,000 francs, or 86 per cent. of the total exportation of French Indo-China; and the imports were valued at 54,963,000 francs, or 53 per cent. of the total. Of the imports, the value of 23,481,000 francs was credited to France or French colonies. The leading imports are textiles, metal and metal goods, and wines. There is a railway 51 miles in length between Saigon and Mytho, and new lines aggregating about 850 miles have been proposed. There are about 2275 miles of telegraph line. See **INDO-CHINA**.

COCOA-NUT PALM PRODUCTS. The cocoa-nut palm is a tree whose culture is rapidly becoming more important, to keep pace with the increasing demand for its products in the markets of the world. According to the *Bulletin of the Bureau of American Republics*, there are probably 300,000,000 trees belonging to 30 different species, and bearing an annual crop of 6,000,000,000 nuts available for use. Over 3000 acres of land in Latin America alone are devoted to the culture of this tree, and its products are put to many different uses. From *copra*, or dried cocoa-nut, oil is extracted which is used in many arts and industries. The kernel is desiccated and sliced for use in the manufacture of confectionery. The value of the cocoa-nuts imported into the United States for these two purposes was \$702,947 in 1900, against \$625,789 in 1899. Quite as important as the kernel itself is the husk of the cocoa-nut, on account of the valuable fibre which it contains,

known as *coir*. This is used for the manufacture of brushes or other articles, or is woven directly into mats or spun into a yarn which is much used both for small mats and the regular yard matting. This matting, on account of its great durability, is particularly suitable for large assembly halls. In 1900 the United States imported 3,901,384 pounds of coir yarn, valued at \$141,850, against 2,530,984 pounds, valued at \$95,968, in 1899. The refuse coir is used for stuffing mattresses and also in horticulture as a protection against insects.

COODMAN, Captain JOHN, author and sailor, died on April 3, 1900. He was born at Dorchester, Mass., October 16, 1814, and after spending two years at Amherst College, left there in 1833, to enter the merchant marine service. During his subsequent career his habits were always studious, and he became a prolific writer. Free ships and free trade were cherished theories of his, and numerous contributions on these subjects have been published by him in the leading periodicals. He also wrote: *Sailor's Life and Sailor's Yarns; Ten Months in Brasil, with Notes on Paraguayan War; The Mormon Country; A Solution of the Mormon Problem; Winter Sketches from the Saddle, by a Septuagenarian.*

COFFEE. The world's production of coffee during 1899-1900 shows an increase over that of 1898-1899, but falls considerably short of the immense output of 1897-98, from the effects of which the market has not yet recovered. If, however, the estimates of the next crop are correct, the decrease in the world's production will be considerable, and if the consumption reaches only that of the previous year, the output for 1900-01 will fall short of the current demand by 1,000,000 sacks, thus reducing the large surplus stock with which the market has been glutted during the last few years. The visible supply of the world on December 1, 1900, was 7,874,142 bags, and on the same day of the previous year, 7,436,492 bags. The following table gives the annual world's output for the last five years, with the estimated crop of 1900-01:

Year.	Sacks.	Year.	Sacks.
1895-96	10,355,000	1898-99	13,723,000
1896-97	13,605,000	1899-1900	14,437,000
1897-98	16,178,000	1900-01	13,975,900

The world's production and consumption during the year 1898-99 was reported as follows:

Production in Sacks of 132 Pounds.	Consumption in Tons.
Brazil	United States
Central America	Germany
Venezuela	France
Hayti	Austria
Mexico	Belgium
Ceylon and British India.....	Italy
Porto Rico	Great Britain
Java	
British West Indies.....	

In 1890-91 the world's deliveries of coffee amounted to 8,718,661 bags, but the increase in production during the last decade has been so great that in 1899-1900 deliveries aggregated 14,972,699 bags, of which Brazil supplied 9,019,000. During the year ending June 30, 1899, the gross importations into the United States amounted to 831,827,063 pounds, with an average value of 6.64 cents a pound, or a total value of \$55,275,470; of which 30,070,195 pounds, valued at \$2,905,286, were re-exported or received while in transit to foreign countries, making the net imports 801,756,868 pounds, valued at \$52,370,184. During the year ending June 30, 1900, the gross importations into the United States amounted to 787,083,611 pounds, with an average value of 6.66 cents a pound, or a total of \$52,466,993. The exports amounted to 44,625,914 pounds, valued at \$4,290,460, so that the net imports, therefore amount to 743,357,697 pounds, valued at \$48,176,533. These figures show a decrease of 58,399,171 pounds from the net imports of the previous fiscal year. Brazil exported during the fiscal year 1900, 5,024,000 bags to Europe, and 3,995,000 bags to the United States.

The exports from India in 1898-99 amounted to 30,246,272 pounds, of which nearly 60 per cent. went to Great Britain. Returns for 1899-1900 are not avail-

able, but they will probably show a considerable decrease in the crop on account of famine, caused by the failure of the monsoons of 1899.

COINS, VALUE OF FOREIGN. The coins and coinage of the United States will be found under the article UNITED STATES, in the paragraph Coinage. The production of gold and silver will be found under the articles GOLD and SILVER. Under the article MONEY will be found the world's stock of gold, silver, and uncovered paper. The following tables show the official valuation of foreign coins by the United States Treasury; first, in the case of countries with fixed currencies; and, second, in the case of countries with fluctuating currencies, giving the quarterly valuations of the latter during the year 1900.

COUNTRIES WITH FIXED CURRENCIES.

The following official (United States Treasury) valuations of foreign coins do not include "rates of exchange."

Countries.	Standard.	Monetary unit.	Value in U.S. gold.	Coins.
Argentine Republic...	Gold and silver..	Peso.....	\$0.96,5	Gold—argentine (\$4.82,4) and $\frac{1}{4}$ argentine; silver—peso and divisions.
Austria-Hungary*	Gold.....	Crown .....	.20,3	Gold—20 crowns (\$4.06,2) and 10 crowns.
Belgium.....	Gold and silver..	Franc .....	.19,3	Gold—10 and 20 franc pieces; silver—5 francs.
Brazil.....	Gold.....	Milreis .....	.54,6	Gold—5, 10, and 20 milreis; silver— $\frac{1}{2}$, 1, and 2 milreis.
British North America (except Newfoundland).	.....do.....	Dollar.....	1.00	
British Honduras.....	.....do.....	.....do.....	1.00	
Chile.....	.....do.....	Peso.....	.86,5	Gold—escudo (\$1.25), doubloon (\$2.65), and condor (\$7.30); silver—peso and divisions.
Costa Rica.....	.....do.....	Colon .....	.46,5	Gold—2, 5, 10, and 20 colons; silver—5, 10, 25, and 50 centesimos.
Cuba.....	Gold and silver..	Peso.....	.92,6	Gold—doubloon (\$5.01,7); silver—peso (60 cents).
Denmark.....	Gold.....	Crown .....	.36,8	Gold—10 and 20 crowns.
Egypt.....	.....do.....	Pound (100 piastres).	4.94,3	Gold—10, 20, 50, and 100 piasters; silver—1, 2, 10, and 20 piasters.
Finland.....	Gold	Mark.....	.19,2	Gold—10 and 20 marks (\$1.98 and \$3.85,9).
France.....	Gold and silver..	Franc .....	.19,3	Gold—5, 10, 20, 50, and 100 francs; silver—5 francs.
Germany.....	Gold.....	Mark.....	.23,8	Gold—5, 10, and 20 marks.
Great Britain.....	.....do.....	Pound sterling..	4.86,6 $\frac{1}{2}$	Gold—sovereign (pound sterling) and half sovereign.
Greece.....	Gold and silver..	Drachma .....	.19,3	Gold—5, 10, 20, 50, and 100 drachmas; silver—5 drachmas.
Haiti.....	.....do.....	Gourde .....	.96,5	Silver—gourde.
India.....	Gold.....	Rupree.....	.32,4	Gold—sovereign (\$4.8665); silver—rupree and divisions.
Italy.....	Gold and silver..	Lira .....	.19,3	Gold—5, 10, 20, 50, and 100 lire; silver—5 lire.
Japan.....	Gold.....	Yen.....	.49,8	Gold—1, 2, 5, 10, and 20 yen.
Liberia.....	.....do.....	Dollar.....	1.00	
Netherlands.....	Gold and silver..	Florin.....	.40,2	Gold—10 florins; silver— $\frac{1}{2}$, 1, and 2 $\frac{1}{2}$ florins.
Newfoundland.....	Gold.....	Dollar.....	1.01,4	Gold—\$2 (\$2.02,7).
Peru†.....	.....do.....	Sol.....	.48,7	Gold—libra (\$4.8665); silver—sol and divisions.
Portugal.....	.....do.....	Milreis.....	1.08	Gold—1, 2, 5, and 10 milreis.
Russia.....	.....do.....	Ruble.....	.51,5	Gold—imperial (\$7.718) and $\frac{1}{4}$ imperial (\$3.80); silver— $\frac{1}{4}$, $\frac{1}{2}$, and 1 ruble.
Spain.....	Gold and silver..	Peseta .....	.19,3	Gold—25 pesetas; silver—5 pesetas.
Sweden and Norway..	Gold.....	Crown .....	.26,8	Gold—10 and 20 crowns.
Switzerland.....	Gold and silver..	Franc .....	.19,3	Gold—5, 10, 20, 50, and 100 francs; silver—5 francs.
Turkey.....	Gold.....	Piaster.....	.04,4	Gold—25, 50, 100, 200, and 500 piasters.
Uruguay.....	.....do.....	Peso.....	1.03,4	Gold—peso; silver—peso and divisions.
Venezuela.....	Gold and silver..	Bolivar.....	.19,3	Gold—5, 10, 20, 50, and 100 bolivars; silver—5 bolivars.

* The gold standard went into effect January 1, 1900. Values are still sometimes expressed in the florin, which is worth 2 crowns.

† Gold standard adopted October 1, 1897.

‡ Gold standard adopted October 13, 1900.

COUNTRIES WITH FLUCTUATING CURRENCIES.

Countries.	Monetary unit.	1900.			
		Jan. 1.	April 1.	July 1.	Oct. 1.
Bolivia.....	Silver boliviano	\$0.42,7	\$0.43,6	\$0.43,8	\$0.45,1
Central America.....	Silver peso.....	.43,7	.43,6	.43,8	.45,1
	Amoy tael .....	.69,1	.70,5	.70,9	.72,9
	Canton tael .....	.68,9	.70,3	.70,7	.72,7
	Chefoo tael .....	.66,1	.67,4	.67,8	.69,7
	Chinkiang tael.....	.67,5	.68,8	.69,3	.71,3
	Fuchau tael .....	.64	.65,2	.65,6	.67,4
	Haikwan tael .....	.70,3	.71,7	.72,1	.74,2
	Hankau tael .....	.64,7	.65,9	.66,3	.68,3
China	Hong-Kong tael	(*)	(*)	(*)	(*)
	Ningpo tael .....	.66,5	.67,7	.68,2	.70,1
	Niuchwang tael.....	.64,8	.66,1	.66,5	.68,4
	Shanghai tael .....	.63,1	.64,4	.64,8	.66,6
	Swatow tael .....	.63,9	.65,1	.65,5	.67,4
	Takao tael .....	.69,6	.70,9	.71,4	.73,4
	Tientsin tael .....	.67	.68,3	.68,7	.70,7
Colombia.....	Silver peso .....	.42,7	.43,6	.43,8	.45,1
Ecuador.....	.....do .....	.42,7	.43,6	.43,8	.45,1
India	Silver rupee .....	.20,3	.20,7	.20,8	.....
Mexico	Silver dollar .....	.46,4	.47,3	.47,6	.49
Persia	Silver kran .....	.07,9	.08	.08,1	.08,3
Peru	Silver sol .....	.42,7	.43,6	.43,8	.45,7

* The "British dollar" has the same legal value as the Mexican dollar in Hong-Kong, the Straits Settlements, and Labuan.

† The sovereign is the standard coin of India, but the rupee is the money of account.

COIR. See COCOA-NUT-PALM PRODUCTS

COKE. The production of coke in the United States is shown in the following table from the *Engineering and Mining Journal*, which indicates a substantial increase for 1900, both in the amount produced and its value:

STATES.	1899.			1900.		
	Tons.	VALUE AT OVEN.		Tons.	VALUE AT OVEN.	
		Total.	Per ton.		Total.	Per ton.
Alabama	1,798,612	\$4,676,391	\$2.60	2,150,000	\$7,095,000	\$3.30
Colorado.....	453,783	1,253,408	2.75	575,447	1,726,841	3.00
Georgia	44,529	92,748	2.06	43,684	117,026	2.41
Illinois	2,000	3,900	1.95	2,000	3,900	1.95
Indiana	2,105	4,105	1.95	1,849	3,122	2.50
Indian Territory	‡ 29,862	95,426	3.25	‡ 47,800	191,300	4.00
Kansas	200,000	600,000	3.00	275,000	618,750	2.25
Kentucky	55,580	79,201	1.42	60,000	126,230	2.10
Missouri	4,560	8,808	1.93	2,218	5,641	2.54
Montana	59,072	401,779	6.80	72,500	500,250	6.90
New Mexico	‡ 33,661	110,046	3.27	‡ 42,803	126,409	3.00
Ohio	73,391	189,477	2.58	47,887	122,591	2.55
Pennsylvania*.....	12,192,570	29,871,796	2.45	11,831,598	30,749,662	2.60
Tennessee	440,157	664,073	1.91	498,157	996,314	2.00
Utah	26,700	122,830	4.60	31,000	146,320	4.72
Virginia	555,507	1,027,688	1.85	568,981	1,142,332	1.94
Washington	31,258	117,811	3.75	38,416	178,634	4.65
West Virginia†.....	‡ 2,054,378	2,590,175	1.25	‡ 2,598,847	4,547,962	1.75
Wyoming	15,979	55,926	3.50	16,000	57,200	3.58
Total coke { Short tons.	18,079,229	\$42,148,468	\$2.33	18,928,372	\$48,456,384	\$2.56
Met. tons.	16,401,369	.....	2.57	17,171,706	.....	2.82

* Includes 4,800 tons made in Wisconsin in 1900.

† Includes 40,537 tons made in Wisconsin in 1899, and 38,000 tons in 1900; also 53,973 tons made in Virginia in 1899, and 64,740 tons in 1900.

‡ Fiscal year.

COLERIDGE-TAYLOR, SAMUEL, a British composer of great promise, was born in London on August 15, 1875, his father being a native of Sierra Leone. He studied the violin at the Royal Academy of Music, where he won a scholarship in composition in 1893. Until 1896 he continued his musical studies under Professor Villiers Stanford. Besides a symphony in A minor (1896) and chamber and vocal

compositions of solid merit, he wrote an operetta, the *Dream Lovers*. His reputation is based on his later works for orchestra, chorus, and solo voices. They include: *Solemn Prelude* for orchestra, performed in 1899 at the Worcester Festival; the overture to the *Hiawatha* trilogy; his cantatas *Hiawatha's Wedding Feast*, *The Death of Minnehaha* (Hanley), 1899, and *The Soul's Expression*, a musical setting of four sonnets, by Elizabeth Barrett Browning, performed in 1900 at the Hereford Festival with great success. See MUSIC.

COLLEGE SETTLEMENTS. See SOCIAL SETTLEMENTS.

COLLEGES. See UNIVERSITIES AND COLLEGES.

COLLEGES, GIFTS TO. See UNIVERSITIES AND COLLEGES.

COLOMBIA, a republic of South America, occupies the northwestern part of the continent, between the Caribbean and the Pacific. The capital is Bogotá.

Area and Population.—The republic consists of 9 departments, the total estimated area of which is 513,938 square miles. It is not unlikely that this estimate is too large; another estimate places the area at 455,000 square miles. Definite demarcations of portions of the Brazilian, Peruvian, Ecuadorean, and Costa Rican boundaries have yet to be made. The inhabitants, according to the official estimate of 1881, numbered 3,878,600; at present the total, including 150,000 uncivilized Indians, probably exceeds 4,000,000. Definite urban statistics are not available, but the populations of the principal towns may be approximately stated as follows: Bogotá, 80,000; Barranquilla, a port on the Magdalena River, 40,000; Medellín, 40,000; Panama, 30,000; Cartagena, 20,000; Bucaramanga, capital of Santander, 20,000; Ibagué, capital of Tolima, 12,000; Popayan, capital of Cauca, 10,000; Cúcuta, 10,000; Turija, capital of Boyacá, 8000.

Government.—By the constitution the chief executive authority rests with a president, who is chosen for a term of six years through the medium of an electoral college, and who is assisted by a responsible cabinet of eight members. The president in 1900 was Señor M. A. San Clemente; on July 31 he was superseded by Vice-President Marroquin, whose assumption of office is described in a succeeding paragraph. The legislative power is vested in a congress, consisting of a senate and a house of representatives, members of the former being delegated to the number of three by each of the nine departments, and of the latter elected at present by popular vote to the number of 66. The departments manage their own finances, but their governors are appointed by the president of the republic.

Army.—The strength of the regular army, which was about 1000 in 1898, is determined at each session of congress; but in case of war the president may raise such forces as are necessary, all able-bodied citizens being liable to military service. Statistics showing the number of men who took part in the civil war during 1900 are not available. Colombia is practically without a sea-going navy.

Finance.—The monetary standard is silver, but paper is the financial basis. The unit of value is the silver peso, which was worth on October 1, 1899, 43.6 cents, and on October 1, 1900, 45.1 cents. Revenue accrues chiefly from customs, and the principal expenditures are for the departments of finance, war, and justice. For the biennial period 1895-96 the revenue amounted to 36,717,748 pesos; for 1897-98 the revenue and expenditure were 37,461,000 pesos and 41,429,180 pesos respectively. The estimated revenue and expenditure for the two years 1899-1900 balance at 29,918,640 pesos. The foreign debt, due largely to English creditors, amounts to £2,700,000 (\$13,138,200). The internal indebtedness, divided nearly equally between the consolidated debt and the floating debt, amounted in 1899 to 11,359,074 pesos. The total public debt, accordingly, is about \$18,261,000. The total money in circulation has been reported at about 9,000,000 pesos, of which 1,473,000 pesos are silver and the remainder uncovered paper. In 1899 there was a premium of 310 per cent. on gold.

Industries and Commerce.—The principal industry is mining; and though the country is well adapted for the cultivation of many tropical products, agriculture has not made great progress; the development of both the mines and the soil is retarded by difficulties of transportation. Manufactures are almost unknown, but there are a few factories for the manufacture of rough cotton and woollen cloths; and at Pradera, northeast of Bogotá, iron works have been established. During 1900 industry and commerce were greatly retarded by the civil war. The principal crop is coffee; other products of importance are cacao, sugar, tobacco, cabinet and dye-woods, vegetable ivory, wheat, corn, fruits, rubber, vanilla, indigo, and medicinal plants. There are large grazing districts, especially in the department of Tolima. In the entire republic the number of cattle, horses, and mules is estimated at about 3,465,000, and the number of sheep, goats, and swine at about 3,487,000.

The mineral resources of Colombia are very great; but though the number of mines in the country is about 5000, the mining industry is not well developed. The gold mines are first in importance and the silver mines second. The former metal occurs in all of the departments, but is mined most successfully in Antioquia and

Darien. There is a large number of silver mines in Cauca and Tolima. The average annual production of gold and silver has been reported at about \$4,000,000 (United States money). The other minerals that are in some degree exploited include copper, mercury, lead, platinum, iron, manganese, cinnabar, emeralds, and salt. Coal and petroleum also occur. The salt mines at Zipaquirá, north of Bogotá, constitute a government monopoly. Among the more important gold-mining companies are the Santa Barbara Gold Placer Company, of New York, which is engaged in work along the Nechi River; the Frontino Bolivian Gold Mining Company, and the French Gold Mining Company, which with another company is reworking the tailings of the Sucre mines. For the exploitation of emeralds, for which Colombia is famous, there have been reported 32 mines, which are chiefly in the region of Muzo and Coscuez. The lease of these mines, which was granted in 1894, and will expire in July, 1901, was sold by the original concessionaire for 400,000 pesos to an English company, which pays 30,000 pesos a year to the Colombian government.

The principal exports include coffee, gold and silver, cotton, live animals and hides, tobacco, cacao, and cabinet and dye-woods. Among the leading imports are food-stuffs and liquors, cotton textiles, iron and steel goods, drugs and chemicals, and illuminating oils. About three-fifths of the imports enter through Barranquilla, on the Caribbean Sea, at the mouth of the Magdalena River, and about one-fifth through Cartagena, which is on the same coast, somewhat to the west of Barranquilla. The value of the foreign trade in gold pesos (worth about \$1 in United States money) has been reported as follows:

	1895.	1896.	1897.	1898.
Imports.....	11,528,365	16,947,135	18,136,598	11,346,028
Exports.....	15,088,406	18,597,352	16,820,411	19,735,733

The coffee exports for four years have been: 1895, 21,504,657 kilos; 1896, 28,521,410 kilos; 1897, 17,564,103 kilos; 1898, 39,100,102 kilos. Colombia's foreign trade is chiefly with Great Britain, the United States, France, Germany, and Venezuela, named in the order of their importance. The commerce with Great Britain and the United States, expressed in American money, has been as follows (fiscal years for British, calendar years for American):

	1896.	1897.	1898.	1899.	1900.
Imports from Great Britain	\$6,543,997	\$5,795,518	\$3,842,641	\$3,388,084	.....
Exports to Great Britain...	2,769,883	2,708,221	3,092,291	2,297,565	.....
Imports from United States	3,680,484	3,627,216	2,923,404	2,985,801	\$2,605,544
Exports to United States..	4,482,721	5,108,368	4,810,465	5,462,432	3,080,427

Panama and Colon are free ports, and are connected by the Panama Railway across the isthmus; their transit trade, which is more important than the direct commerce of the country, is not included in the foregoing figures.

Communications.—Regular wagon roads in Colombia are few and in wretched condition. A considerable amount of traffic is carried on by river, especially the Magdalena; of this stream, 780 miles are navigable, and in addition it has 215 miles of navigable tributaries. In 1899 the reported length of railways open to traffic was 663 kilometres, and there was a considerable mileage, either projected or under construction. In January, 1900, the Colombian National Railway Company, Limited, was organized in London with a capital stock of £1,500,000 for the purpose of building a railroad from Girardot, on the Magdalena River, to the Sabana Railroad. Efforts have been made for the improvement of the Magdalena River, and in 1900 the government awarded to a native firm in Barranquilla a contract for clearing the mouth of the river. In 1898 there were 8600 miles of telegraph, with 448 offices.

Religion and Education.—The established faith is Roman Catholicism, but to some extent religious toleration exists. Education is in a backward condition. For primary instruction, which is free, but not compulsory, there were in 1894, 1817 schools, with an attendance of about 89,000 pupils. Nearly all the schools for secondary education are under ecclesiastical influence. Aside from university and professional students, the total number of persons attending the public schools and "colleges" in 1897 was about 143,000. There is a national institute, a school of arts and trades, a national school of music with about 150 students, and a national university with about 1600 students.

Panama Canal.—In April, 1900, the Colombian government, in consideration of 3,000,000 francs, extended its concession to the Panama Canal Company for a period of six years, from April, 1904, that is, to April, 1910. In the summer of 1900 the company's directors carried on negotiations with Admiral Walker's commission, and believed that the latter would report to the United States Congress in favor of the Panama route. The directors postponed the rendering of any decision as to what guarantees they would demand of the United States government in case the

latter should elect to assume the ownership and management of the canal. The Culebra cutting, however, was being slowly pushed forward; in July it had been excavated down to the level of 45 metres above the sea and 3000 men were employed. In the spring of 1900 a company called the Inter-oceanic Canal Company was incorporated under the laws of New Jersey for building, owning, and operating a trans-isthmian canal.

Civil War.—The revolutionary movement that developed in the fall of 1899, and was thought to have been brought about largely through the alleged misappropriation of public moneys, continued during 1900 with varying success for each of the opposing forces, but, as in the previous year, reports seemed usually untrustworthy and often contradictory.

The insurgent General Herrera reported that on January 16 and 17 with 6000 men he defeated 10,000 government troops, the losses in killed and wounded being 750 and 1700 respectively.

On March 31, an expedition commanded by General Manuel Herrera landed at David, a town on the Pacific coast in the territory then claimed by both Colombia and Costa Rica. The destination and purpose of the expedition were at first unknown, but it finally proved to be a reinforcement for the Colombian insurgents. Accordingly, the Colombian government, supposing that in some way the government or citizens of Nicaragua were responsible for the expedition, sent a note of displeasure to Señor Zelaya, the Nicaraguan president.

Reports of the insurrection in May indicated that the rebels were making some progress. There were affirmations and denials of their capture of Cartagena, Colon, and Barranquilla. It was certain, however, that the financial condition of the government was deplorable, the continued issuance of fiat money having raised the rate of exchange to 1300.

In June the fighting increased. On the eighth and ninth of the month, some ten miles from Panama, the insurgents defeated the government troops, of whom about 200 were killed. Though the insurgents had control of the department of Panama, exclusive of the city, and though on June 28 a flotilla with some 2000 rebels appearing at Bocas de Cenozas caused much excitement in Cartagena and Barranquilla, the other parts of the republic at this time were practically dominated by the government forces. A rebel victory was reported as having taken place some ten miles from Panama, June 12-14. The insurgents were commanded by General Balasarse Parras. The alleged losses in killed among the government troops were 35 officers and 400 men. General Parras with 2000 men then prepared to take Panama.

This town was captured, and on July 15 the government troops entered Colon, which, however, was occupied by the rebels without fighting on the next day. About the same time a rebel force ascended the Sinu River and captured several towns, including Lorica and San Antero. At this time General Ruiz commanded six hundred insurgents in the department of Cartagena, while the defences of the city of the same name were being strengthened by government troops. A part of the insurgent forces were defeated at Palo Negro, department of Santander, and were pursued up the Magdalena River by government troops. Government forces were intrenched at Panama and the insurgents at Charne. The latter also held Barranquilla and Cartagena. But after the capture of Panama by the insurgents there followed a fierce battle within the city, which lasted for eleven hours, and resulted in the defeat of the insurgents with unusually heavy loss. Having also been defeated in Santander, and having lost all control in Bogotá and throughout the departments of Antioquia, Cauca, and Cundinamarca, while their troops in the department of Tolima were surrounded by the enemy, the insurgents agreed, about the last of July, to terms of peace, according to which they were to deliver up their arms, ammunition, and ships, and to receive from the government full amnesty.

Little was heard of the insurgents in the latter part of the summer, but about the last of August Señor José Manuel Marroquin, the Colombian vice-president, announced to the various powers that, on account of the great age and the inability of President San Clemente, he had yielded to the demands of the people and the army and had assumed executive authority. A few weeks later it became known through the United States minister that on July 31 Marroquin had treacherously thrown San Clemente into prison and was practically playing the rôle of a dictator. In September Bogotá was reported to be in a state of confusion, and it was feared that Marroquin's *coup d'état* would produce another revolutionary movement. Later, however, it was announced that President San Clemente had decided to offer no forcible opposition to the Marroquin government, and accordingly he tendered his resignation, leaving the former vice-president in power. In October the Marroquin government was recognized by the United States.

Notwithstanding the peace agreement new outbreaks were reported in August, and in September the revolutionists' diplomatic agent in the United States maintained that the insurrection was not suppressed, but that rebel forces, particularly in the eastern part of the country, were gaining in strength. Fighting continued in

October, when the insurgent general Uribe with 1500 men captured Corozal, a city of 10,000 inhabitants, defended by a government garrison numbering about 1000. About the same time the insurgents besieging Buenaventura were defeated. A government force of 3000 troops, commanded by General Pinzon, the minister of war, left Bogotá to meet Uribe's men, who were moving down the Magdalena River to attack Barranquilla, and further fighting was expected. It appeared later that Uribe was overtaken at Rosario and defeated.

A report from Kingston, Jamaica, dated October 29, 1900, stated that the government printing office at Bogotá had been robbed of \$1,000,000 worth of paper money and the plates from which the notes were printed. The burglars left a letter stating that the theft had been committed in the interest of the insurgent cause.

Despite several reverses the rebels seemed to be making progress in November. At this time the losses in killed and wounded were reported to have reached the surprisingly high number of 30,000, and the country was being impoverished. In December the cause of the revolutionists was apparently still gaining, but no news had come of their operations near Barranquilla. It was reported that the rebel general Benito Hernandez had captured the city of Cúcuta, near the Venezuelan frontier, in the department of Santander; that a severe battle, in which the rebels lost 100 in killed and wounded, including General P. Camacho, the government loss being 100 killed and 5 cannon and 200 men captured, was fought on November 25 at Tolu Viejo, in the department of Bolivar, and that General Vargas Santos, president of the revolutionary government, was established at the port of La Hacha, in the department of Magdalena. Nevertheless, the Colombian minister for foreign affairs reported on December 9, 1900, that the rebellion was dying out, the insurgents under General Uribe and other leaders having been dispersed at Rosario, Lamesa Girardot, and Buenaventura, and that peace had been restored in several departments. It appeared, moreover, that General Uribe, who was the most important of the rebel leaders, had fled to Maracaibo, in Venezuela, and that President Marroquin, taking advantage of his absence, had made new overtures of peace to insurgents still under arms. In the fall of 1900 the government forces had pressed the British steamer *Tobago* into its service, but later the government was forced to return the vessel and to agree to the payment of an indemnity of £6000. More than once during the year it was charged that the insurgent leaders had been bribed into a cessation of hostilities, and the unaccountable rebel reverses in the summer, as well as in the latter part of the year, together with a justifiable suspicion of the mercenary motives that usually underlie a Latin-American revolt, lent color to these reports. At the close of the year many of the best towns and villages of the republic had been devastated, and no one seemed to know exactly what the war was all about. A revolutionary movement was at this time springing up in Venezuela; and the Venezuelan and Colombian governments, not content with troubles of their own, were each accusing the other, and apparently with good cause, of giving assistance to the rebel forces.

COLONIAL DAMES OF AMERICA, organized in 1890, with patriotic and educational aims, has a large number of members and subordinate branches in many States. President, Mrs. John Lyon Gardiner; secretary, Mrs. T. M. Cheesman, 109 University Place, New York City.

COLONIAL DAMES OF AMERICA, NATIONAL SOCIETY, organized in 1891, is formed as a federation of 35 State societies, all duly incorporated in the several States. Membership over 4000 in 1900. President, Mrs. Justine Van Rensselaer Townsend; secretary, Mrs. William Read, 103 West Monument Street, Baltimore, Md. The work of the society is purely historical and educational.

COLONIAL WARS, SOCIETY OF, founded in 1892, to perpetuate the memory of the events and persons connected with the wars of the American colonies. Governor-general, Frederic J. de Peyster; secretary-general, Walter L. Saydam, 45 William Street, New York City. It has 2650 members in the United States.

COLONIES. Colonial Problems of the United States.—The colonial problems of the United States may now be said to be reduced to the single one of the Philippines: assuming, that is, that in the cases now pending before the Supreme Court (see UNITED STATES, paragraph Judiciary) it shall be held that the United States may govern as subjects the inhabitants of acquired territory. If, however, the court does not so hold, the gravest questions of territorial administration will at once be opened up. Roughly speaking, the administration will be forced either to abandon Porto Rico and the Philippines, or to form them at no distant date into States or Territories. But if the acts of Congress and the executive are not invalidated by the court, all the evidence goes to show that the present government of Porto Rico and Hawaii will prove fairly satisfactory. On April 12 a bill was approved by the President (see PORTO RICO, paragraph Tariff and Civil Government Bill) providing civil government and a representative assembly for Porto Rico. Charles H. Allen (*q.v.*) was on May 1 appointed governor of the island under this bill, and the first legislative session was held in December. While the economic and sanitary con-

ditions of the island are unsatisfactory, much has been done during the year to improve them. What is of more importance, is that the natives were reported to be uniformly in favor of the American *régime*, and to be seconding the efforts for the island's improvement which had been initiated by the administrative officers appointed by the President. The law enacted by Congress for the government of the island is, as may be seen from an examination of the bill, an exceedingly elastic instrument. If the Porto Ricans show themselves capable of self-government, no exterior restraint is likely to be placed upon them; on the other hand elaborate provisions for nullifying unwise popular legislation may be brought into play at any time. For the upper chamber of the Legislature is controlled by presidential appointees, the governor may exercise the power of veto, and finally Congress reserves the right to annul any and all insular legislation.

On April 27 a bill was passed by Congress providing a territorial form of government (see HAWAII, paragraph Hawaiian Government Bill) for Hawaii. Citizens of Hawaii are declared to be *de facto* citizens of the United States, and thus Hawaii is taken out of the category of colonies and constituted a regular territory. Two clauses of the congressional bill are of special importance to the welfare of the island. One of these prohibits the territorial Legislature from granting special privileges, immunities, or franchises to corporations without the consent of Congress, and the other provides that all officials appointed by the President shall be citizens of Hawaii, thus avoiding "carpet-bag" government. The provision that, except as otherwise provided, the laws of the island shall continue in effect as they were under the republic, is of value in preventing any sudden and radical change resulting from the change of government. The appointment, as governor of the island, of Sanford B. Dole, who was formerly president of the republic, also seemed likely to reassure the conservative interests. A provision of the bill which has been much discussed is that abolishing the contract labor system. It is said that many of the Chinese who formerly worked the sugar plantations have refused to work longer now that they are not bound to do so, and as the sugar industries depend chiefly upon this class of labor, considerable trouble is liable to ensue.

The Philippine question remained unsettled throughout the year. The President did not recommend Congress to enact legislation to give the islands a definite form of government or to fix their political status; and Congress, both because of the impending presidential election and because no one knew how long the Philippine insurrection would continue, was not inclined to take up the matter on its own initiative, so affairs in the East continued to be directed by the President and his cabinet. In March a commission was appointed (see PHILIPPINES, paragraph Philippine Commission), which was instructed by the President to carry on the work commenced by the military authorities of organizing a civil government for the islands, and of putting it into operation so far and so soon as the suspension of military operations by the Filipinos made this possible. The municipal governments were to be administered by natives, and a special effort was to be made to have the government work in harmony with the existing institutions and customs of the inhabitants. The report of the commission upon the success of its efforts and an account of the military and civil conditions in the Philippines will be found under the article PHILIPPINES. Except for the fact that the military operations of the Filipinos had become less organized, and that temporary civil governments had been set up in various places by the Philippine Commission, the colonial problem in the East at the close of 1900 was in very much the same condition as it was two years before. That is to say, Congress had not passed any legislation in regard to the Philippine Islands, and no permanent government had been organized in the islands.

Colonial Policies of European Nations.—With the appearance of the new colonial problems in the United States, the experience and the policy of the older nations have at once assumed a practical interest in the eyes of American statesmen, and of all those interested in public affairs. As the subject came into prominence quite suddenly, it found public opinion entirely unprepared, and with practically no accessible literature for its guidance. To meet this public want the American Economic Association, at its meeting at New Haven, appointed a committee to publish a collection of monographs on the subject of colonial finance, embodying the history of the financial policies of various countries with reference to their colonies. Not only does the financial policy constitute the chief element in the relations between colony and mother country, but it also furnishes the key to their political relations. Furthermore, the information given under that head for most of the countries throws an interesting light on the question as to whether colonies pay from a purely financial point of view. The *Essays in Colonial Finance*, written by specialists and published by the association in August, 1900, are well designed to bring out these points.

The *French Colonial System*, dating back to the fifteenth century, has gone through four different stages, according to Professor Seligman. Previous to the Revolution the colonies were administered on the principle of the greatest possible profit to the ruling country, the interests of the colonists hardly being considered.

The system proved, however, to be unsatisfactory even to the rulers, not to speak of the subjects, and in 1825 a change of policy was inaugurated, tending to secure to the colonists a large measure of self-government in fiscal as well as other matters. This condition lasted until 1841, when many of the liberties previously granted were revoked and a stricter financial control by the home government introduced. In 1854, however, the policy was greatly modified, and the colonists acquired considerable independence in fiscal matters. Although the home government reserves the control in certain matters, yet on the other hand it makes itself responsible for the expenses involved, the most important of which are the support of the army and navy, the salaries of the various government officials, the maintenance of prisons, and, in short, all expenses incident to the conduct of government. This system has remained in vogue until the present time, with the exception of the right of the colonies to impose their own tariffs, which was withdrawn from them in 1892. That the French colonies have not proved a paying investment to the government may be seen from the following few figures: In 1898 the expenses for the colonies for which the government is responsible amounted to over 91,000,000 francs. In addition the government paid out 23,500,000 francs in ship subsidies for the colonies, making a total expense of about 115,000,000 francs against about 8,000,000 francs of colonial receipts. The French taxpayer is thus made to contribute more than 100,000,000 francs annually for maintaining control over the French dependencies. So much for the colonial part of the French budget. As far as the budgets of the colonies themselves are concerned, the latter are allowed free play in the method of raising their revenue except the right of fixing the tariff duties, but in the matter of expenses there are certain items, called obligatory expenses, for which each colony must provide in its budget. The obligatory expenses include among others the payment of the debt, the maintenance of the government buildings, a part of the maintenance and salaries for public instruction, police, insane, and poor children. Summing up the French system, Professor Seligman comes to the conclusion "that the French government wavers between two lines of policy. On the one hand the movement toward local autonomy has granted the colonies substantial rights of fixing their own sources of revenue and expenditure in accordance with the dictates of local expediency. On the other hand, the movement toward centralization or so-called assimilation has taken away from the colonies the privilege of levying their own tariffs, and has imposed upon many of the dependencies a system of taxation more suitable to the interests of the mother country than to those of the colonies themselves; has declared certain of the colonial expenditures obligatory; and finally has complicated the relations between the colonies and the home government by a series of subventions on the one hand and of contingents and contributions on the other. The most recent and enlightened colonial administrators themselves plead not only for a simplification of the relations between the colonies and the home government, but also for a larger share of independence and initiative on the part of the colonies themselves."

British Colonial System.—In the case of the British colonies, no such uniformity is observed as in the French possessions. The financial as well as the general political policy differs from colony to colony, ranging from absolute control by the home government in some of its Asiatic colonies to complete financial independence in Canada and Australia. The several systems must therefore be described separately. As a rule the system varies with the degree of industrial development of the colony and the character of its population. Thus, the fiscal system prevailing in the *West Indies* is determined, according to Professor Hull, by their insular situation in the tropics, their exclusively agricultural character, and the improvidence of their black population. The decline of the sugar industry, the chief industry of those islands, has resulted in a complete break-down of the financial machinery of those islands, necessitating the granting of financial assistance by the home government. Thus the British government, though reluctant to adopt the French and German policy of succoring its dependencies, has been forced to enter upon that path, and in consequence to assume a stricter control of the finances of its West Indian colonies. As a result there has been considerable political friction between the colonies and the home government, which is not likely to disappear until a more satisfactory system is designed.

England's financial and, therefore, political control of *Egypt* dates from 1883, and is limited only to the extent in which other European Powers are allowed a voice in the administration of Egyptian finances. This covers largely the control of that part of the revenues of the country which is set apart for the payment of the debt. The body entrusted with that control is called the *Caisse de la Dette*. When first created, in 1876, it consisted of three representatives of foreign Powers whose subjects were the chief creditors of Egypt—namely, France, Austria, and Italy—but at present it includes representatives of all the great Powers. The prerogatives of its members have been gradually enlarged since its organization, so that according to Sir Alfred Milner, "they even possess a certain legislative power; and many of the

creeds recite in their preamble the adhesion of the *Caisse* to their provisions. . . . Occupying a position of special trust, possessing a special knowledge of the details of a most complex situation, they are the natural advisers of their respective governments on all questions of a financial character which the Egyptian government may be obliged to submit to the approval of the Powers." But the political rule and financial control of the country is in British hands. The British financial adviser is the virtual ruler of the country. He has a veto upon all financial legislation. His approval is necessary before the Council of Ministers adopts any appropriation. Although the Egyptians have been granted a form of constitutional government, their influence on the administration of public affairs is virtually nil. The Egyptian parliament, if it may be so called, is composed of a legislative council and a general assembly. The former is composed of 30 members, 14 of whom are appointed by the government and 16 are elected by the provincial assemblies. Its powers are limited to the right of examining the budget submitted by the government (which means the British financial adviser) and to proposing amendments which need not, however, be accepted by the government. The general assembly consists of the 6 ministers of state, the 30 members of the legislative council, and of 46 notables, of whom 35 are chosen by the provincial assemblies, and the rest are nominated by the government. The general assembly meets but once in two years, and, like the legislative council, has no initiative in legislation, although it has the right to veto measures of taxation. But as a large number of the members of the general assembly are appointees of the government, the latter has no difficulty in securing a majority for all practical purposes. The finances of Egypt since the British occupation have passed through three phases. The first period, from 1883 to 1888, was one that taxed most the endurance of the Egyptian taxpayers—that is, the poorest peasants. The object of British intervention was to secure the payment of the debt, and not to improve the condition of the Egyptian people. Toward the end of that period, however, a sufficient surplus began to accumulate in the coffers of the government to warrant some relief, and certain taxes were either entirely abolished or greatly reduced, the total reduction of direct taxation exceeding \$5,500,000. Some of the indirect taxes, notably the salt tax, were also reduced. This opened the second period, which lasted until the close of 1894, when instead of further reducing the taxes, it was decided to devote a certain part of the revenues to remunerative expenditures, such as drainage, construction of railways, building of hospitals and other public buildings, etc. As the budget stands at present (see EGYPT) nearly three-fourths of all the revenue is derived from indirect taxation and the land tax, both of which fall heaviest on the poorer classes of the people. It will be seen from the above description that the system of government in Egypt leaves very little power, if any, to the people of the country, vesting the entire control in the British government, except in so far as it is limited by the foreign Powers.

The distinctive feature of British colonial government in *South Africa* is flexibility. As time progresses the forms of government change, yielding a wider sphere of influence to the colonies with the settlement of the country, and the assurance of the predominance of British influence. At present there are three systems of colonial government in South Africa, says Professor Roland P. Falkner. First, the one prevailing in the self-governing colonies, as Cape Colony and Natal; second, that of imperial control over the British South Africa Company; and third, the system of protectorates. (The recently acquired Boer territories are not considered here.) In each of these the original settlers were governed by imperial officers appointed by the crown, the colonies themselves having practically no part, or, at any rate, very little, in the administration of affairs. The right of self-government was usually extended at first to local affairs, and its sphere gradually enlarged. As in each case the colonists came in conflict with the native population, the imperial government found it necessary to regulate the relations between the colonists and the neighboring natives by establishing so-called protectorates on the borders of British territory. With the extension of those borders, which never failed to come in due course of time, the protectorates were merged with the original colonies, the natives losing the last vestige of independence, and new protectorates were established on the extended borders. Cape Colony as now administered is practically a self-governing country, the control of its internal affairs by the imperial government being limited to the executive and judiciary. The governor appointed by the crown has no more power than a monarch under a constitutional form of government. Though nominally appointing his ministers, he has to be guided in his choice by the will of the majority in the colonial parliament. The legislature, which is the real controlling power in the land, is entirely in the hands of the colonists. It is composed of two houses—the council and the assembly. A high property qualification is maintained for members of the council, but the requirements for members of the assembly, as well as for qualified voters, are extremely small. In addition to the legislature there are divisional councils, having charge of local government, and municipal governments and village and harbor boards for the towns and villages.

The financial administration is, of course, entirely in the hands of the people. The only contribution from the imperial treasury to colonial revenues is in connection with military expenditures, the home government maintaining a considerable force in the colony and assuming the cost of armament for the fortifications. The chief source of revenue is customs duties, which are regulated by the legislature. There is a South African Customs Union, which includes all of the South African colonies, and provides for a uniform tariff upon goods imported into the union and absolute free trade between the territories of which it is composed. The rate of duty is, as a rule, below 10 per cent. *ad valorem* for manufactured articles, from 25 to 38 per cent. on agricultural products, and from 48 to 88 per cent. on tobacco and liquors. The railroads are in the hands of the state, and net the government a clear income of about \$5,000,000 per annum. The largest item of expenditure, some \$6,000,000, is for the payment of the public debt, which has been contracted very largely for productive purposes. The government of Natal is very much similar to that of Cape Colony, differing only in details, such as property qualifications, the number of members in the legislature, etc. The government of Rhodesia, otherwise known as the territory of the British South Africa Company, underwent a change in favor of stricter control by the home government after the Jameson Raid. By the Order in Council of 1898 the supreme control is vested in a resident commissioner, who represents the crown, and is directly responsible to the lord high commissioner, residing in Cape Town. The company is represented in the government of the territory by a number of administrators, whom it appoints with the approval of the secretary of state, and by five members of the legislative council, whom it appoints in addition to four members elected by registered voters. The nine members, together with the administrators and the resident commissioner, form the legislative council. It will be seen that in the legislative council the voters are in the minority, and that the company is practically supreme ruler of the territory, subject only to the control of the home government. The revenue is largely derived from public property and public services, and has been below the expenditures all the time. According to a statement of the director of the company, the accumulated deficit "will constitute a public debt whenever the inhabitants of Rhodesia are prepared to take over the full responsibility for its administration." The company will thus be reimbursed for a considerable portion of its outlay, and be left in the possession of its mining and commercial interests.

In the protectorates the people are not allowed any voice in the government. The most important of these, Bechuanaland was ceded by the imperial government to Cape Colony. The government, according to the administrator of those territories, had spent \$10,000,000 on the former protectorate before it transferred it as a free gift to Cape Colony. The colony is deriving a surplus revenue from that territory equal to about \$100,000 per year, about one-fifth of the revenue being derived from a hut tax, and the rest from customs duties. Basutoland, though retroceded to the crown in 1884, continues to receive a subvention from the Cape government to the amount of \$90,000, annually, the tax upon the natives yielding \$135,000.

The British Asiatic Possessions.—Straits Settlements, the Federated Malay States, Labuan, British North Borneo, Sarawak, Hong Kong, Fiji, British New Guinea, Ceylon and Mauritius (African), are administered on quite a uniform plan so far as the political control by the home government is concerned, although different methods are used for raising the revenue, according to the natural resources of each colony. The great bulk of the population being composed of semi-civilized natives, the colonies are left no voice in the general government of their territories. The latter is entirely in the hands of the home government, which administers affairs through its appointed officers, to whom are sometimes added so-called unofficial resident members, representing the resident white population, but also nominated by the home government, and forming but a minority of the governing body. The internal affairs are left to the native chiefs, whose co-operation is secured by an indirect bribery in the shape of very large salaries. The taxes are levied by the government officials representing the home government, and the general policy is to make the colonies self-supporting, which means that the natives have to pay the expenses of administration, both civil and military. Part of the military expenses is paid by the home government, and in some of the colonies, especially in the case of the Federated Malay States, the expenditures exceed the income, and the deficit is covered by loans advanced by the home government. This means a considerable addition to the annual expense of those states in the shape of interest on the debt, which in a good many of them forms the largest item of the budget. In the Straits Settlements, whose material prosperity depends very largely on their commerce, no import duties to speak of are raised, and the revenue is met largely by means of internal taxation. In the other colonies the import duties furnish a considerable part of the revenue. No discriminating tariffs are levied in the colonies against foreign countries, all of them being on an equal footing with

Great Britain in that regard. Export taxes also furnish considerable revenue, and are levied on products which can be produced by the colonies at a great advantage over the rest of the world.

The *German Colonial System* is that of a pure absolutism administered through a centralized bureaucracy. Neither the natives nor the white inhabitants of the colonies have any voice in the fiscal or political administration of the territories. The laws for the colonies are framed by the imperial parliament, and the German citizens residing in the colonies have enjoyed the same civil rights as in the mother country. The natives are not regarded as German citizens, but are allowed to acquire citizenship by naturalization in accordance with the general laws regulating such procedure. A fundamental law in respect to the administration of colonies had been laid down by the *Reichstag* in 1886 and subsequently amended in 1887 and 1888. The only exception where the native element is recognized in the administration of colonial affairs is in the case of some of the districts where it was thought advisable to placate the native chiefs by making them the medium of communication between the imperial government and the native population. The budget for the colonies is nominally vested in the emperor, though virtually it is in the hands of the governor of the colony and his immediate subordinates. The revenue is derived from taxation, sale or lease of public property, fees, and subventions from the home government. Direct taxes form as yet but a small item in the government revenues; but having been recently introduced, they will, no doubt, yield a greater share in the near future. A house tax has lately been established, applicable both to Europeans and natives. The rate of the tax is expressed in money, but the natives are allowed to offer produce or labor as the equivalent of the tax. The determination of the value of the labor and natural products is left, however, to the local authorities, thus allowing for the display of a good deal of arbitrary power by the colonial officers and the possible abuse of the defenceless natives. Moreover, "measures are provided for the enforcement of the tax, and for this purpose forced labor is permitted." Recent experience has shown that the system is productive of excessive hardships for the natives, and affords opportunity for the display of great cruelty by the local officers. The revenues derived from the various sources in the colonies are far, however, from being sufficient to cover the necessary expenses, and the home government is constrained to grant large subventions from year to year. Thus, the amounts granted by the *Reichstag* for the expenses of colonial administration have increased from 9,497,000 marks in 1896-97 and 8,505,000 marks in 1897-98 to 16,030,000 in 1898 and 25,200,000 in 1899. As will be seen from the following tables, the government subvention forms about 70 per cent. of the total revenues of German East Africa, 88 per cent. of Southwest Africa, 57 per cent. of Cameroon, 31 per cent. of Togo, 90 per cent. of New Guinea, and 100 per cent. of Kiao-chau.

GERMAN EAST AFRICA.

(All sums are expressed in thousands of marks.)

Source.	1894-95	1895-96	1896-97	1897-98	1898	1899
Direct taxes.....	.....	.....	.....	.....	100	350
Customs	1,750	1,750	1,350	1,400	1,625	1,750
Other taxes, fees, and administration income.....	400	400	250	300	435	410
Imperial subvention.....	3,370	3,687	4,301	4,339	3,805	5,985
Total.....	5,520	5,837	5,901	6,039	5,965	8,495

SOUTHWEST AFRICA.

Direct taxes.....	.....	.....	.....	.....	10	10
Customs	27	27	386	550	350	500
Other taxes, fees, and administration income.....	.....	.....	.....	.....	40	40
Railroad administration.....	.....	.....	.....	.....	.....	20
Imperial subvention.....	1,000	1,700	4,087	3,015	4,601	6,609
Total.....	1,027	1,727	4,473	3,565	5,001	7,179

CAMEROON.

Direct taxes.....	.....	.....	.....	.....	28	28
Customs	565	565	590	500	460	600
Other taxes, fees, and administration income.....	46	45	50	80	92	102
Imperial subvention.....	.....	620	677	690	814	983
Total.....	611	1,230	1,317	1,270	1,394	1,713

TOGO.						
Direct taxes.....	.....	.....	.....	.....	27	27
Customs	180	262	377	395	500	500
Other taxes, fees, and adminis- tration income.....	6	3	3	5	23	23
Imperial subvention.....	.....	.....	.....	.....	.....	254
Total.....	186	265	380	400	550	804

NEW GUINEA.

(All sums are expressed in thousands of marks.)

Source.	1894-95	1895-96	1896-97	1897-98	1898	1899
Direct taxes, customs, other taxes, fees, and administration income	75
Imperial subvention.....	657
Total.....	732

KIAO-CHAU.

Imperial subvention.....	5,000	8,500
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The expenditures of the colonies are largely absorbed by salaries of civil and military administrators, expeditions, and explorations, and, with the exception of the building of roads, which to some extent may ultimately benefit the native population, are of primary benefit to the German companies, whose sole object is the exploitation of the native population. Thus, the colonial system of Germany does not seem to have proven so far to be of any benefit either to the natives or to the home government. In East Africa alone the government has so far expended the sum of 80,000,000 marks, yet German trade in that territory has steadily declined, amounting in 1899 to only one-third of the expenditures for that year. It remains to be seen from future development of German commerce and industry in connection with the colonies whether the millions spent annually by the German government at the expense of the German taxpayer have been a justifiable and paying investment.

The Dutch Colonial System is that of exploitation of the native population and of the natural resources of the colonies. "The native princes have become salaried officials," and are subordinate to the orders of the home government. The system of administration is that of the most strict centralization. The governor-general is the supreme ruler of the colonies, except in so far as he is accountable to the home government. Since 1830, when the government took over the direct responsibilities of administration from the East India Company, the population has been taxed to its extreme capacity. Until 1860 the prevailing method of exploitation was known as the "culture system." The natives were required to give part of their land and labor to the government without any compensation whatever. The government disposed of the products in the European markets and realized a very large "net surplus," which figured as a regular item of revenue in the home budget. The amount of money that the Dutch government has thus extracted from its colonial subjects is estimated at from 725,000,000 to 781,000,000 florins in the forty years from 1831 to 1871. In the sixties a great change set in, due to the agitation in Holland against the inhuman system. The forced cultures were abolished in most cases, although it remained until the present time in the case of some of the products, especially coffee. While there has been a mitigation of the abuse of the poor by the local officers, there has been no decrease in the total amount of money derived by the home government in the form of taxes, since other sources of revenue have been extended to make up for the deficiency on that account. The revenues derived from the colonies have averaged for the last thirty years about 130,000,000 florins (nearly \$55,000,000). The old surplus has, however, given place to a deficit of late, due especially to increased military expenditures, caused by the resistance of the native tribes to further extension of Dutch rule. The war in northern Sumatra has been going on since 1873, and has not ended yet. The revenues of the colonies are derived from taxes, the sale of products from the government monopolies farmed out by the government, and receipts from lands and services. The greater part of the taxes is contributed by the natives in addition to the forced labor and other forms of exploitation, which are hidden under the above items of revenue. The following serves to illustrate the curious way in which the budget of the Dutch colonies is made up: After preparing the budget of Curaçoa for 1900 "the governor submitted it to the council May 9, 1899, and it was adopted July 13, after eight amendments had been made in it. This provisional budget, with the governor's message, the report of the council, and the message in answer, was then sent to the Netherlands, was presented in the Second Chamber November 6, and after two unimportant changes had been made in it was finally acted on in the First Chamber, January 19, 1900. Complaint was made in the

Second Chamber that the budgets of both Curaçao and Surinam were presented to the members too late to allow them the proper amount of time for examination, and neither budget was finally adopted till several weeks after the opening of the fiscal year."

Spanish Colonial Policy.—Although Spain's colonial domain is a thing of the past, its colonial policy is of great historical importance and practical interest as well, in so far as it teaches a lesson. Unlike England and Holland, and of late years the United States, the chief cause of Spain's colonial expansion was not merely the desire to increase its trade and build up its industries, but simply the greed for money on the part of the king and the military nobility. Military exploits and territorial aggrandizement being the dominant motives, it was natural that the government of the colonies should be left entirely in the hands of the ruling class of Spain, and should be directed toward extracting the greatest possible amount of wealth for the crown and the nobility without any regard for the interests of the colonists, either native or white. As the chief means to that end, a very oppressive system of taxation was established throughout, which proved ruinous, not only on account of the large amount of wealth taken from the colonies, but also because it stifled industry in its very inception. The colonists were not allowed to raise any products that could be raised at home, as that was considered injurious to the interests of the mother country. They could not cultivate tobacco, because that would compete with the home product. In Buenos Ayres the cultivation of the olive and grape was prohibited for a similar reason. Likewise with the raising of hemp, flax, and saffron. "In 1703," says Mr. Blackmar, "it was ordered by royal decree that all vines should be rooted out of certain provinces, because the merchants of Cadiz complained of the falling off in the consumption of olives." In this policy the Spaniards followed the principles of the mercantilists, who believed that the interests of a country would be best subserved by accumulating within its borders the greatest possible amount of precious metals in exchange for its products. To carry the oppressive measures into effect an elaborate and expensive system of officialdom was maintained, requiring in its turn an increased taxation to maintain it. It goes without saying that the colonists were not consulted either as to the kind of taxes that should be imposed on them or as to the total amount. Nearly everything was taxed—"real estate and agriculture, industry and commerce, the transmission of property, consumption, salaries of government officers, railway tickets and transportation, certificates of fidelity, imports, exports, loading and unloading ships, travellers, colonial produce, commercial paper, stamped goods, tobacco, salt, lotteries," etc. Were the taxes to be applied to the development of the resources of the colonists they might not prove so injurious in the end. As it was, however, they served to deprive the colonists of any amount of free capital that was saved from the few industries allowed to be carried on, and thus doomed the colonies to stagnation and even decay. How the revenues were spent may be seen from the Cuban budget for the fiscal year 1888-89 under the late *régime*, which might be called very liberal in comparison with the very narrow policy that prevailed in the preceding centuries. Of the 26,356,731 pesos of total revenue for that year, 22,500,808 pesos represented "sovereignty expenses"—that is, expenditures for war, navy, and the other executive departments of the government—largely going to pay the salaries of officials, nearly exclusively Spanish grandees, who were a failure at home, and were sent to the colonies to "recuperate." About one-half of the total revenue—namely, more than 12,500,000 pesos—went for the payment of interest on the debt. Less than 15 per cent. of the total revenue was designed for the needs of the local government, and the great bulk of even that small amount of money represented again salaries of Spanish officials. The so-called liberal government granted to some of the Spanish colonies in the latter half of the nineteenth century was very closely limited by the following provision in the constitution, which authorized the "intervention of the king, and in a proper case of the Cortes, to prevent the provincial deputations and the municipal councils to go beyond the limits of their powers to the prejudice of general and permanent interests," and the "determination of their powers with regard to the budgets, in order that the provincial and municipal budgets may never be in opposition to the tax system of the state."

In spite of the direful effects of this policy, not only on the colonists, but on Spain itself, the Spanish government persisted to the bitter end in a course which Mr. Blackmar characterizes as follows: "The colonial policy of Spain was made up of an oppressive commercial policy, a ruinous and oppressive industrial policy, a destructive political policy, a defective and unjust financial policy." What was the result of such a course, which carries with it a very significant lesson for every nation that enters on a career of colonial expansion? Spain undermined its own foundation throughout its vast empire, and from the mightiest of nations a few centuries ago it sank to the position of a weak and inferior power, and lost its entire colonial domain.

The Danish Colonial System is of comparatively small importance, on account of

the small size of the colonies and the very few interests involved. Its chief interest, from an American point of view, lies in the fact of the close proximity of the Danish West Indies to the recent American acquisitions and the recent negotiations between the United States and Denmark for the acquisition of those islands. The Danish government has pursued a very liberal and enlightened policy toward its colonies, but it is questionable whether it ever derived any appreciable benefit from its possessions. The political organization of the islands leaves the colonists almost perfect self-government, limited only by the control of the home government through a governor, appointed by the crown, whose powers are, however, almost exclusively executive. The government is in the hands of two colonial councils, one for each of the two districts into which the colonies are divided. Members of the councils elected by the colonists form about three-fourths of the total membership of those bodies, the rest being appointed by the king. Thus, the legislation is left entirely to the people. The population, which is almost exclusively black, is not more than 35,000 all told. All the revenues and expenditures are provided for in the budget, which is made up by the governor and presented to the colonial council for approval. There is a certain amount of charges which the colonial secretary must assume, which includes the expenses of colonial administration, all the military expenditures, and other expenses of sovereignty. Otherwise, says Mr. Tooke, "no measures touching the economic affairs of the commune can be effected by the governor or other superior, nor can any expenditure from the colonial treasury be directed without the consent of the colonial council." The revenue is chiefly derived from indirect taxes, the direct taxes, owing to the undeveloped state of the inhabitants and the general poverty of the people, yielding less than one-third of the total revenue. The greater part of the revenue is derived from import duties, which differ very greatly in the two districts. The tariff in St. Thomas and St. John may be called a "tariff for revenue only," the import duty amounting to 3 per cent. of the value of the goods, whereas at St. Croix, which is an agricultural district, and fears the competition of agricultural products in the United States, there is a high protective duty on wheat, meats, and nearly every other kind of food products. There is also an export duty of 5 per cent. on sugar in both districts, and on molasses equal to $1\frac{1}{3}$ cents per gallon in St. Thomas and St. John, and 3 cents in St. Croix. Ever since 1870 the revenue has not been sufficient to meet the expenses of the colonies, and the deficit has been growing at an accelerating rate, starting with \$19,000 in 1870 and reaching the high-water mark of \$150,000 in 1891-92, the annual deficit since then fluctuating between that figure and \$100,000. The deficit is being covered from year to year by the Danish government, whose total advances to the colonies now exceed \$1,000,000, a rather large sum for a country of its size and resources. An attempt on the part of the Danish government to reform the system of taxation and expenditures, so as to wipe out the deficit, met with a stubborn opposition on the part of the colonial council, which saw in the proposed reform an encroachment upon the home rule of the colonies. The matter has, therefore, remained as it was before, which explains the desire of the Danish government to part with its possessions.

COLORADO, a Western State of the United States, has a land area of 103,645 square miles. The capital is Denver. Colorado was admitted to the Union August 1, 1876.

Agriculture.—The total area under cultivation in 1900 was estimated at 2,600,000 acres. The production and value of the principal crops were as follows: Corn, 3,188,941 bushels, \$1,530,692; wheat, 7,207,117 bushels, \$4,252,199; oats, 3,272,390 bushels, \$1,407,128; barley, 314,266 bushels, \$157,133; rye, 39,480 bushels, \$21,319; potatoes, 1,863,288 bushels, \$1,527,896; and hay, 1,783,133 tons, \$13,551,811. The bulletin of the National Association of Wool Manufacturers estimated the wool crop of 1900 as follows: Number of sheep, 2,128,508; wool, washed and unwashed, 13,303,175 pounds; wool, scoured, 4,390,048 pounds.

Forest Reserve.—There are in Colorado five reserves, known as Pike's Peak, Plum Creek, South Platte, White River, and Battlement Mesa reserves, with a combined area of 4848 square miles, or 5 per cent. of the total area of the State. In the first three reserves named, fires and timber cutting have destroyed nearly all the timber of value, and cannot be regarded as sources of supply of timber for many years to come. Investigations made in 1898 showed that the principal trees in the reserves of Colorado are the yellow pine, and varieties of spruce and fir.

Mineralogy.—The aggregate value of the mineral yield of the State for 1900 was about \$55,000,000. The supremacy of Colorado in the production of gold and silver was maintained, the amount of gold produced being estimated at 1,437,062 fine ounces, value, \$29,500,000; and silver, 20,292,200 fine ounces, value, \$12,378,242. The coal output for 1900 was 5,495,734 tons, and for 1899, 4,776,224 tons, each year showing an increase of about 700,000 tons over the preceding year. There was a marked increase in the use of mining machines in 1899, and the mines in operation numbered 108, as against 101 in 1898. Two small mines were idle practically throughout the entire year 1899 on account of labor troubles, and short-time strikes occurred in 7



IRRIGATION IN THE WEST.—1. Head-Gate of Larimer and Weld Canal, Poudre Valley, Colorado. 2. Amity Canal, Arkansas Valley, Colorado.

other mines, but these had no material effect on the production. The production of iron ore amounted to 307,557 long tons, valued at \$749,734, a decrease of 10,923 long tons from the amount produced in 1898. This decrease was largely due to the opening of ore deposits in Wyoming and New Mexico, and to the use of liberal amounts of lead ores from Idaho in the Colorado silver smelters. Of the iron ore mined in 1899, 96 per cent. was brown hematite, and 4 per cent. red hematite. 390,278 barrels of petroleum, valued at \$404,110, were produced in 1899, and quarrying yielded granite, marble, sandstone, and limestone to the value of \$315,308.

Manufactures.—In 1899 there were 231 manufacturers of cigars and 23 of tobacco. The aggregate output for the calendar year was 15,387,866 cigars, 15,300 cigarettes, and 190,844 pounds of smoking tobacco. In 1899 Colorado and Missouri together produced 138,880 long tons of pig iron, and in 1900, 159,204 tons.

Banks.—On October 31, 1900, there were 40 national banks in operation and 30 in liquidation. The active capital aggregated \$4,387,000; circulation, \$3,337,050; deposits, \$56,721,313; and reserve, \$25,878,723. The State banks, July 2, 1900, numbered 30, and had capital, \$1,430,000; deposits, \$8,136,722; and resources, \$9,885,023; and private banks, 13, with capital, \$137,000; deposits, \$584,982; and resources, \$795,517. The exchanges at the Denver clearing house in the year ended September 30, 1900, aggregated \$214,477,526, an increase of \$49,201,020 in a year.

Education.—In 1899 the school population was 135,800; number enrolled in public schools, 108,816; average daily attendance, 69,065. There were 3294 teachers employed, 1739 school buildings; and public school property valued at \$6,495,855. The revenue was \$3,004,587; and expenditures, \$2,281,713, of which \$1,454,117 was for teachers' and superintendents' salaries. There were 41 public high schools, with 5457 students and 217 teachers; and 6 private secondary schools, with 140 secondary students and 37 teachers; one public normal school, with 323 students and 17 teachers; and one private normal school, with 246 students and 8 teachers. In 1900 the State University comprised 6 departments; the number of buildings was 12; there were 8 instructors and lecturers, 475 university students, and 375 preparatory students. The attendance at the State School of Mines was 234, an increase of 28 per cent. The school census for 1900 showed an increase of 10,676 pupils in a year. During 1899 and 1900 126 new school buildings were constructed.

Railroads.—During the calendar year 1900 the new construction of railroads aggregated 85.10 miles, giving the State a total mileage of about 5000.

Penal Institutions and Charities.—On November 30, 1900, the State penitentiary contained 514 inmates—83 paroled and 23 pardoned prisoners, making a total for the year of 620 inmates. The estimated expenses of this institution for the fiscal year aggregated \$200,000. At the close of the fiscal year the State reformatory contained 118 inmates, and the insane asylum 507.

National Guard.—In 1900 the national guard of the State consisted of two regiments of infantry, of 476 and 421 men respectively. There were in addition three troops of cavalry, consisting of 155 men, a battery of artillery of 61 men, and a medical department and signal corps of 26 and 11 men respectively.

Municipal Affairs.—The estimated premiums on fire insurance paid by the citizens of Denver from April to December, 1900, was \$700,000. Losses by fire were only \$360,629. On this account plans for self-insurance by the citizens of Denver were proposed.

Population.—According to the United States census, the population in 1900 was 539,700, an increase of nearly 40 per cent. since 1890.

Elections.—The State and national elections in 1900 showed very large gains for the Republican ticket. In 1896 the vote for Bryan was 161,153, and for McKinley, 26,271. In 1900 Bryan polled 122,733 votes, and McKinley, 93,072. In 1898 the Fusionist nominee for governor received 93,972 votes, the Republican nominee, 51,051. In 1900, J. B. Orman, the Fusionist candidate for governor, received 121,995 votes, and F. C. Goudy, the Republican candidate, 93,245 votes. The State Legislature in 1899 consisted, in the Senate, of 9 Democrats, 2 Republicans, 9 Populists, and 15 of the silver party. In the House there were 21 Democrats, 6 Republicans, 20 Populists and 18 of the silver party. As a result of the elections the Legislature for 1901 will consist, in the Senate, of 19 Democrats, 2 Republicans, 6 Populists, and 8 Silver Republicans; in the House there will be 33 Democrats, 10 Republicans, 9 Populists, and 13 Silver Republicans. John F. Shafrath and John C. Bell, Fusionists, were returned to Congress, though by much reduced majorities.

Constitutional Amendment.—At the general elections held in November, a constitutional amendment proposed by the assembly of 1899 was adopted. This amendment provides that the assembly may hereafter at any single session propose not more than six amendments to the constitution. Previously the assembly was authorized to propose only one amendment at each session, and as a result much needed reforms were greatly delayed.

State Officers and National Representatives.—State officers for 1900: Executive—

governor, C. S. Thomas (Dem.); lieutenant-governor, Francis Carney (Pop.); secretary of state, E. F. Beckwith (Pop.); treasurer, John F. Fesler (Rep.); auditor, George W. Temple (Rep.); adjutant-general, J. C. Overmyer (Dem.); attorney-general, D. M. Campbell (Rep.); superintendent of education, Helen Grenfell (Rep.)

Judiciary—Supreme Court: Chief justice, John Campbell (Rep.); associate justices, L. M. Goddard (Dem.); W. H. Gabbert (Dem.); clerk, H. G. Clark (Rep.).

Senators in the 56th Congress: E. O. Wolcott (Rep.) and Henry M. Teller (Ind.). Representatives: John F. Shafroth (Silverite), from Denver, and John C. Bell (Pop.), from Montrose.

State Officers for 1901: Governor, James B. Orman (Dem.); lieutenant-governor, David C. Coates (Peo.); secretary of state, David A. Mills (Peo.); treasurer, J. N. Chipley (Silv. Rep.); auditor, Charles W. Cronter (Dem.); attorney-general, Charles C. Post (Dem.); superintendent of education, Helen L. Grenfell. Supreme Court: Chief justice, John Campbell (Rep.); justices, Robert W. Steele (Fus.); William H. Gabbert (Dem.); clerk, H. G. Clark. The State Legislature consists of 52 Democrats, 12 Republicans, 15 Populists, and 21 Silverites.

Senators in the 57th Congress: Thomas M. Patterson (Fus.) and Henry M. Teller (Ind.). Representatives: John F. Shafroth (Silverite), from Denver, and John C. Bell (Pop.), from Montrose.

COLORED HEARING. See SYNÆSTHESIA.

COLORED METHODISTS constitute a considerable part of the numerical strength of Methodism. A number of separate organizations, embracing over 1,400,000 communicants, are maintained by negro Methodists, but these do not include the entire colored membership, for many conferences of the Methodist Episcopal Church (South) are almost exclusively colored, and other Methodist bodies include some negro members. The more important African bodies are: **AFRICAN METHODIST EPISCOPAL CHURCH**, founded 1816, at Philadelphia, has 5659 ministers, 5775 churches, and 673,504 members; **AFRICAN METHODIST EPISCOPAL ZION CHURCH**, independently organized 1820 by negroes who seceded from Methodist Episcopal churches about New York City, comprises 3155 ministers, 2006 churches, and 536,271 members; **COLORED METHODIST CHURCH**, founded 1870 by members of the Southern Methodist Episcopal Church, is represented by 2187 ministers, 1300 churches, and 190,206 members.

The negro bodies show consistent progress on the whole; some of them support well-equipped educational institutions and publications devoted to their race, church building is advancing rapidly, and missionary enterprises are meeting with decided interest at home and with promising success in foreign fields.

COLUMBIA UNIVERSITY, New York City, founded 1754. In 1899-1900 new agreements were made with Barnard College and with the Teachers College by which these corporations have become completely a part of the educational system of the university. Barnard becomes a separate college for women with a faculty of its own, which controls the instruction leading to the degree of B.A., and its relations to the university council become, in substance, the same as those of Columbia College. Women who have received the bachelor's degree may become candidates for the M.A. and Ph.D. degrees as students of the university, instead, as heretofore, of graduate students of Barnard College. Teachers College (except that the corporation remains distinct) secures the same status in the educational system of the university as the College of Physicians and Surgeons enjoys. In 1900 the first summer session was held with a large attendance. In the college department a comparatively slight modification in entrance requirements, but one whose results, it is believed, will be far-reaching, will allow of entrance into the B.A. course not only of graduates from the so-called classical course of the public high schools, but students in other courses as well. This change allows such students to enter without Latin. They must offer as an equivalent mathematics, modern languages, history, or natural sciences, and must study Latin in the college for at least three years, taking it in their first year for five hours a week. Students who enter upon Latin are required to study it in the college for one year for three hours a week. Such articulation between high-school and college will, without substantially changing the requirements for admission, do away with the dilemma of those high-school students who have been unable to enter Columbia as candidates for the degree of B.A., because they have not studied the right things. This ruling of the university is in line with changes already made at several other universities, particularly Harvard and Cornell. In connection with this a change has been made in the form of stating these requirements. The total demand made upon the student, being expressed in points rather than in subjects, gives to the requirements as a whole a greater degree of flexibility. In the schools of applied science, also, Latin or Spanish may now be offered for admission in lieu of French. The financial statement contained in the president's

eleventh annual report, submitted October 1, 1900, shows that the debt of the university growing out of its removal to Morningside Heights is still substantially \$3,000,000. The debit interest account of the year was about \$10,000 less, and the deficiency on the educational account was reduced from \$43,000 to \$17,000. The income of the university for educational purposes was \$803,162.71, to which a deficiency appropriation of \$17,328.47 was added. Considerably over \$500,000 came to the university during the college year in the form of gifts, of which about \$100,000 was for current uses and for equipment. Among special gifts was \$100,000 from John D. Rockefeller for a chair in psychology; \$100,000 by bequest from Dorman B. Eaton, subject to the life interest of his widow, for a professorship on municipal administration; \$100,000, pledged by alumni for the purpose of adding a story to University Hall; \$100,000 by an anonymous contributor for a new building dedicated to the religious and spiritual activities of the students; additional endowments of \$10,000 each for the Carl Schurz Library and Carl Schurz fellowship funds, \$12,400 each for the Alexander Proudft fellowship and Maria Proudft fellowship funds, and \$5000 for the further endowment of the Avery Architectural Library. The university library received also a series of valuable Chinese books from W. B. Parsons. The additions to the library during the year aggregated 20,200 books, making the present collection about 300,000.

The statistics of officers and students for the college year show a faculty of 350 professors, instructors, and assistants, and a total student attendance, excluding the 417 students of the summer session, and deducting for names duplicated below, of 3207, distributed as follows: College, 465; school of law, 380; College of Physicians and Surgeons, 1787; schools of applied science, 491; school of political science, 250; school of philosophy, 213; school of pure science, 115; Barnard College, 333; Teachers College, 391. In addition, 751 students received instruction during the year through the Teachers College extension courses. The number of students graduated in 1899-1900 was 563, of whom 108 received M.A. degrees and 21 Ph.D.; 3 honorary M.A. degrees were granted also, and 6 honorary LL.D. degrees. The second quinquennial award of Barnard Medal for Meritorious Service to Science was made at commencement, on the recommendation of the National Academy of Sciences, to Professor Röntgen, of the University of Würzburg, for the discovery of the X-rays. The first award was made to Lord Rayleigh and Professor Ramsay for their discovery of argon. Professor James H. Robinson, of the department of history, was reappointed acting dean of Barnard for the new year, and provision was made for the immediate erection of a dormitory for women under the auspices of the Teachers College. See **PSYCHOLOGY, EXPERIMENTAL, AND UNIVERSITIES AND COLLEGES.**

COMETS. See **ASTRONOMICAL PROGRESS.**

CONGER, EDWIN H., United States minister to China, resident at Peking during the siege of the legations there from June 20 to August 14, 1900, was born in Knox County, Ill., March 7, 1843. He graduated at Lombard University, Galesburg, Ill., in 1862, and at the Albany Law School in 1866. He served in the army for three years during the Civil War, marched with Sherman from Atlanta to the sea, and received the brevet of major. After the war Mr. Conger practised law for two years in Illinois, and then removed to Iowa, where he became engaged in stock raising and banking. In 1882 he was elected State treasurer of Iowa on the Republican ticket, and served till 1885, when he was elected to Congress. He was a member of Congress until 1890, when he resigned to accept the office of minister to Brazil, offered him by President Harrison. In 1895 the Democratic administration accepted Mr. Conger's resignation, but in 1897 he was reappointed to Brazil by President McKinley. In 1898 Mr. Conger was recalled from Brazil and entrusted with the embassy at Peking, a much more important position, and one requiring ability, astuteness, and experience.

At the beginning of the siege of the foreigners in Peking on June 28, 1900, Mr. Conger with his wife and daughters withdrew from the American to the British Legation, which was more strongly defended. Here they remained until the legations were relieved on August 14. Mr. Conger was the only representative of a foreign power to communicate with his home government during the siege. Through the efforts of President McKinley a message was sent to Mr. Conger through the Chinese minister at Washington (see **UNITED STATES**, paragraph **Foreign Relations—China**), and this message was replied to through the Chinese authorities at Peking. During the subsequent negotiations with the Chinese commissioners Mr. Conger represented the conservative attitude of the United States. On account of the dissatisfaction of the United States government with the indemnities proposals included in the joint note submitted to China by the foreign envoys in December, Mr. Conger was the last representative of the Powers to sign that note. For an account of these negotiations and the previous uprising in Peking, see the article **CHINESE EMPIRE.**

CONGO FREE STATE, a country of central Africa under the sovereignty of Leopold II., King of the Belgians, is bounded on the north by French Congo and

the eastern Soudan (under British influence), on the east by Uganda, German East Africa (being separated in large part therefrom by Lake Tanganyika), and British central Africa, on the south by British central Africa and Portuguese West Africa, and on the west by French Congo and Portuguese West Africa, the Free State having egress through the latter to the Atlantic by way of the Congo River. The total estimated area is 900,000 square miles, and various estimates place the population, which is of Bantu origin, at from 8,000,000 to 30,000,000, the latter figure being the official estimate of 1896. In January, 1899, the white inhabitants numbered 1630, of whom 959 were Belgian, 129 Portuguese, 113 Italian, 94 English, 81 Swedish, 65 Dutch, 41 Danish, 34 Norwegian, 29 French, 28 American, 21 German. The natives speak numerous dialects, and their religion is a crude fetichism. Mission work is carried on at nearly 70 stations by about 225 missionaries, almost equally divided between Roman Catholics and Protestants. An article published in 1900 stated that under King Leopold the policy of the Belgians had been to administer the country not only for their own aggrandizement, but for its permanent improvement, and that the progress of the Free State in both commerce and civilization was exceedingly promising. While an impetus had been given to Belgian home industries, the fruits of civilization had been placed within the grasp of the Congolese. That the latter are not entirely heedless of their opportunity, the article went on to say, may be seen in the fact that they are alive to the benefits not only of commerce, but of the education offered in the many schools already established. Another view of Belgian management has been called forth by various atrocities perpetrated in 1900, mention of which is made in a succeeding paragraph.

Government, etc.—In 1876 King Leopold II. founded the Congo International Association, which obtained recognition of its sovereignty over the Free State in 1884 and 1885 from most of the European nations and the United States, and which on February 26, 1885, approved the resolutions of the Berlin congress. According to these resolutions, the sovereignty of the state was continued in the person of King Leopold, free trade was established in the basin of the Congo, arbitration was stipulated for the settlement of international disputes, and provision was made for the protection of natives and the suppression of the slave trade. In 1890 the International Conference at Brussels authorized the imposition of certain duties by the Free State, and in the same year a conference between the Free State and Belgium gave the latter the option of annexation on or after February 3, 1901. In August, 1889, King Leopold had made a will, bequeathing to Belgium his sovereign rights in the Free State. The boundaries of the Free State were defined by treaties made with Germany, Great Britain, France, and Portugal in 1884, 1885, 1891, and 1894. The government is vested in King Leopold, who has under him at Brussels a secretary of state, presiding over the departments of the interior, foreign affairs, and finance, while at Boma, the capital of the Free State, government is administered by a governor-general, representing the king and subject to his orders. Under the governor-general a commissioner administers each of the fourteen districts, which are as follows: Aruwimi, Banana, Bangola, Boma, Equator, the Falls, Kwango Oriental, Lake Leopold II., Lualaba-Kesai, Matadi, Stanley Falls, Stanley Pool, Ubangi, Welle. The army of the Free State consists of 23 companies of native troops, commanded by Belgian officers; the total effective strength in 1899 was nearly 12,000 men. The estimated revenue and expenditure have been as follows: 1898, 14,765,000 francs and 17,252,000 francs respectively; 1899, revenue, 19,966,500 francs; expenditure, 19,673,000; 1900, revenue, 26,256,500 francs; expenditure, 27,731,000 francs. The chief sources of revenue are the state domain and customs and transport dues; the revenue for 1900 included 2,000,000 francs from the Belgian government and 1,000,000 francs from King Leopold. The largest expenditures are for the departments of finance and the interior. The money in use is Belgian, the franc being worth 19.3 cents.

Production and Commerce.—There are three classes of lands in the Free State—lands occupied by natives, private registered lands of persons who are not natives, and the state domain, which consists of all lands not included in the other two classes. The most important export is rubber, which constitutes about three-fifths of the whole, ivory, palm-kernels, palm-oil, ground-nuts, hides. Difficulties of transport retard commerce in these articles as well as in other products of the country, which include coffee, tobacco, sugar, cotton, rice, orchilla, gum copal, and cam wood. Various minerals, including iron and copper, occur; but mining has not been developed. For the protection of the rubber interests of the Free State, a bureau of control is charged with the enforcement of a decree of 1892, which forbids the gathering of rubber by any other method than incision in the bark; this incision must not amount to destruction of the tree, and, according to another decree, not less than one hundred and fifty trees must be planted for every ton of rubber extracted. But, of course, in so vast a territory the enforcement of such laws is difficult, not to say

impossible. The principal imports are textiles and apparel, foodstuffs, machinery and other metal goods, and alcoholic beverages. On the last named there is a special import duty. The reported value in francs of trade has been as follows:

	1894.	1895.	1896.	1897.	1898.
Imports.....	11,854,022	11,836,034	16,040,371	23,427,198	25,185,139
Exports.....	11,031,704	12,135,656	15,091,138	17,457,090	25,396,706

In 1898 the importations of textiles and clothing was valued at about 6,247,000 francs, and of steam vessels and their machinery, 2,374,400 francs; in the same year the value of the rubber export was 15,851,000 francs, and of the ivory export, 4,319,000 francs. Trade is mainly with Belgium. In 1898 there entered the ports of Banana and Boma 215 sea-going vessels, aggregating 374,819 tons, and cleared 215, with a tonnage of 374,370. The principal flags under which this tonnage was carried were, in the order of their importance, Belgian, British, and German.

Communications.—The Congo River is navigable for ocean steamers as far as Matadi, a town 27 miles above Boma and 112 miles from the Atlantic; six steamers belonging to the state ply on this section of the river. The next section, to Stanley Pool, is rendered unnavigable by rapids. Communication, however, is effected by a railway, opened for traffic in July, 1898, and running at an average distance of 20 miles south of the river for about 250 miles, from Matadi to Stanley Pool. On the upper Congo, above Stanley Pool, a system of transportation has been organized by the government and is carried on by over 20 steamers, which are engaged chiefly in carrying soldiers and officials and in bringing down for export rubber and ivory. Several tributaries of the river are navigable for many miles, and the Congo itself allows the passage of fairly large vessels as far as Stanley Falls, some 100 miles above Stanley Pool. Several new lines of railway, aggregating about 930 miles in length, have been proposed, and in 1900 it was announced that a short line was being constructed by the government from Boma to Mayumbe. A telegraph line has been under construction from Stanley Pool to Stanley Falls, whence a branch has been projected to Lake Tanganyika and another to Rejaf on the Nile. The Free State belongs to the postal union, and in 1899 had 20 post-offices.

Reported Atrocities.—While reports of the Free State officials have indicated the promising conditions mentioned in the first paragraph of this article, various statements of missionaries and others having a knowledge of affairs in the country have for several years included most revolting accounts of the treatment suffered by the natives at the hands of the Belgian authorities and the native troops. The Congolese in general are savages, and some, it is said, still practise cannibalism. To manage them and avert uprisings is doubtless a difficult task. But the severity shown toward the natives, many of whom—the *libérés*—are practically slaves of the government, does not seem to have been called forth so much by rebellion as by remissness on the part of the natives in the payment of taxes—that is, tribute of rubber. In 1898 there were reports—made chiefly by missionaries—of great cruelty practised on the natives by the black soldiery, villages being burned, and men, women, and children being horribly mutilated. It should be said that there has always been some difficulty in finding out the exact condition of these matters in the Free State. In 1900 there seemed to be a recrudescence of these savage practices, for in the spring of the year there came from the Free State reports of new murders and mutilations of natives at the order of Congo officials on account of the farmers' failure to pay certain taxes. Systematic plunder of the natives on the part of the Congo government was also alleged. Though the Belgian government is not responsible for and has no peculiar right to intervene in such matters, the atrocities were discussed and deprecated in the Chamber of Representatives. Appeal was made to Mr. Joseph Chamberlain, the British colonial secretary, but although many atrocities seemed to be authenticated, he held that he was without sufficient information to warrant interference. In December, 1900, a severe arraignment of the Free State government appeared in the London *Speaker*, parts of which were as follows: "An inferno of wickedness—a very abomination of desolation—has grown up in that 'free and independent' state which augured so well for the good of Africa and her sons. The outer husks of civilization no doubt exist in the Congo State." The *Speaker* said in substance that beneath this husk of decency flourishes a foul despotism, concealing its true nature by a mask of simulated philanthropy; that the Free State is a huge trading monopoly founded upon forced labor; a rule incompetent and unscrupulous, "maintained with difficulty by cannibal levies armed with modern weapons of precision, which, after fifteen years of mismanagement and sheer cruelty, is unable to keep order within a few miles of its principal administrative centres;" and that the responsibility rests upon King Leopold. The same article stated that anarchy existed in several parts of the Free State, including the Mongolla, Kassai, Mangema, and Aruwimi districts, and the region around Stanley Falls. The remedy

suggested for these conditions of incompetency and lawlessness was that the European Powers—particularly Great Britain, Germany, and France—prevent the retention of the territories of the Congo by the present Free State government after February 3, 1901, the time when Belgium has the option of annexation; and should the Belgian government not wish to undertake the administration of so large a territory, it was suggested that, in any event, the present government be discontinued.

Boundary Dispute.—It was announced in May, 1900, that a boundary dispute had precipitated a conflict in the vicinity of Lake Kivu between Free State troops and the forces of German East Africa. Compelling the departure of the Belgian authorities by threat of attack, the Germans, it was said, seized Free State territory as far as the Rusizi River—some 3000 square miles—holding it with about 1000 troops. The dispute is said to have arisen through the ignorance of the geography of the region around Lake Kivu on the part of both the German and the Belgian authorities. Consequently a mistake was made involving the 3000 square miles, which by a strict interpretation of the treaty, it is said, belong to the Free State, but which by the intent of the treaty are German. In November it was announced that, in return for the assistance rendered by Germany to Belgium in obtaining a strip of Chinese territory on the left bank of the Pei-ho below Tientsin, King Leopold, as sovereign of the Free State, had agreed to a rectification of the frontier near Lake Kivu in favor of Germany.

CONGREGATIONALISTS, since the landing of the Pilgrims at Plymouth, have developed great strength, particularly in New England. During the latter part of the nineteenth century their growth in the new States of the West has been rapid and, in the South, from which they were excluded for their anti-slavery views until after the Civil War, they have a large following among the negroes, on whose education they expend much labor and money. The doctrinal status of the church, as defined in 1883 by a commission of the National Council, is of a general evangelical character; its church polity, complete local autonomy of individual churches united by a bond of fellowship. The Congregationalists report for 1900, 629,874 members, 5614 ministers, and 5604 churches, a gain in membership for the last decade of twenty-three per cent. They claim, as connected with their denomination, 37 colleges, and carry on their theological education through 7 seminaries with 64 professors and 342 students.

CONGREGATIONAL METHODIST CHURCH, founded 1852 in Georgia, composed of both white and colored members, its negro constituency being subordinatedly organized into conferences. In government it is not strictly congregational, for appeals may be carried to district conferences which are semi-annual, to annual State conferences, and to the general conference, which meets quadrennially. In 1888 many of its members joined the Congregationalists. The church has more than doubled its membership in the last ten years. It reports (1900) 210 ministers, 240 churches, and 20,000 members, a notable increase over 1899.

CONGREGATIONAL NATIONAL COUNCIL, established 1871, is made up of delegates appointed by local organizations, one for every ten churches. The present composition of the council, which meets triennially, is: Moderator, Rev. Frederick A. Noble, D.D.; secretary, Rev. Asher Anderson, Meriden, Conn.; treasurer, Rev. S. B. Forbes; registrar, Rev. W. H. Moore. The session of 1901 will be held at Portland, Me., on October 12-17.

CONGRESSIONAL LIBRARY, established at Washington in 1800; destroyed in 1814 by the British, and refounded by the purchase of Thomas Jefferson's library. The last report of Dr. Herbert Putnam, librarian of Congress, is dated December 4, 1900, and is for the year ending June 30, 1900. The growth of the library was as follows: books and pamphlets, 38,110; manuscripts, 778; maps and charts, 3536 pieces; music, 16,605 pieces, and prints, 14,048 pieces. The serials currently received numbered 5300. The total contents of the library at the end of the period covered by the report numbered 995,166 volumes and pamphlets, 27,278 manuscripts, 55,717 maps and charts, 294,070 pieces of music and 84,871 prints. Of the accessions the largest number come through copyright deposits. Of the books and pamphlets added, 10,599 came in this way, while 9209 came by purchase, 5415 by gift and 3277 through the United States government. The expenditures for this library were \$226,840.46, or, including care and maintenance, \$331,040.42. The largest item was that for salaries—\$118,944.24, with \$38,775.70 for salaries in the copyright office, other expenses including \$31,670.83 for increase of the library and \$33,378.60 for printing and binding. The copyright business included the entry of titles numbering 94,798, of which 86,438 were titles of productions by residents of the United States. The fees amounted to \$65,206, while the expenses of the copyright division were \$45,475.70. But these statistics give only a slight indication of the activity of the library of Congress under its new administration. During the year the 96 new positions created in response to Dr. Putnam's recommendations were filled by appointments

from 805 applications on file. In this report it is stated that 26 additional cataloguers are provided for; 12 more are to be added next year, so that by July, 1902, the cataloguing force will number 84. During the year Dr. Putnam arranged in Europe for improved facilities for exchange and additional sources of supply. A fully equipped bindery and a small printing plant for printing catalogue cards and minor library publications have been installed in the library building as a branch of the Government Printing Office. With the increased force three main catalogues have been begun, with a good prospect that not only current accessions will be properly catalogued, but that order will be obtained from the former condition of chaos. Three important bibliographies have been published dealing respectively with colonization and dependencies, trusts, and inter-oceanic canal and railway routes. The main reading-room is open from 9 A.M. to 10 P.M. The total number of visitors to the building was 655,439, as against 643,961 in 1899. The readers in the main reading room numbered 123,844 as against 121,290 in 1899. The recorded use of books and periodicals was 364,396 as against 297,662 in 1899. The class of books most largely used was history—74,942 volumes. The number of books issued for home use shows a decrease from 20,650 in 1899 to 17,898 in 1900. The appropriations for 1901 have been considerably increased, the item for book purchases, \$61,180 being almost double that of last year, while that for printing and binding, \$75,000, is more than twice that of 1900.

CONNECTICUT, one of the New England States of the United States; has an area of 4990 square miles. The capital is Hartford.

Agriculture.—The production and value of the principal crops for 1900 was as follows: corn, 1,771,180 bushels, \$974,149; wheat, 6864 bushels, \$5628; oats, 578,987 bushels, \$202,645; rye, \$239,802 bushels, \$155,871; buckwheat, 60,304 bushels, \$39,198; potatoes, 2,478,528 bushels, \$1,734,970; and hay, 427,411 tons, \$7,150,586. The bulletin of the National Association of Wool Manufacturers estimates the wool product for 1900 to be: Number of sheep, 31,204; wool, washed and unwashed, 171,622 pounds; wool, scoured, 101,257 pounds.

Industries.—The following table presents statistics of the principal manufacturing industries in the State for the year 1900:

	Number of estab- lishments.	Average number of employees.	Aggregate wages paid.	Value of product.
Brass and brass goods.....	76	21,187	\$10,734,173	\$60,749,086
Machine shops.....	83	12,081	6,918,232	19,606,183
General hardware.....	35	9,440	4,416,528	12,612,957
Iron and iron foundries.....	40	4,774	2,543,650	7,347,611
Rubber goods.....	14	5,520	2,535,253	18,944,672
Cotton mills.....	27	8,637	2,764,337	8,485,419
Cotton goods.....	29	3,641	1,321,445	6,862,781
Woolens and woollen mills.....	47	6,996	3,468,310	12,487,566
Silk goods.....	22	6,181	2,361,794	11,632,212
Paper and paper goods.....	50	2,974	1,248,888	5,592,008
Miscellaneous*.....	569	27,531	12,065,981	45,024,073
Total.....	712	108,782	\$49,173,568	\$309,396,538

* Including carriages, corsets, cutlery, hats, hosiery, leather goods, musical instruments, and silver and plated ware.

The number of cigar factories during the calendar year was reported at 380, and tobacco factories, 38. Their combined production was 44,174,910 cigars, 204,670 cigarettes, and 25,323 pounds of smoking tobacco. Quarrying during the year 1899 produced granite to the value of \$516,886; sandstone, \$271,623; and limestone, \$162,388. The annual report of the shell-fish commissioners states that the area of oyster grounds under cultivation in 1900 was 63,850 acres. The output of oysters was less than the average, but the product found a fair market at an improved price.

Commerce.—In the fiscal year ended June 30, 1900, the imports of merchandise at Fairfield, Hartford, New Haven, New London, and Stonington aggregated in value \$1,820,052, as against \$735,221 for the previous fiscal year; exports insignificant. No statistics are available for the large domestic water traffic on Long Island Sound.

Banks.—On October 31, 1900, there were 84 national banks in operation and 19 in liquidation. The aggregate active capital was \$20,546,020; circulation, \$10,390,354; deposits, \$44,304,169; and reserve, \$12,933,280. The State banks, June 30, 1900, numbered 8, and had capital, \$2,240,000; deposits, \$7,145,744; and resources, \$10,504,875; loan and trust companies, 14, with capital, \$1,775,000; deposits, \$8,540,191; and resources, \$11,483,840; and mutual savings banks, October 1, 1899, 88, with depositors, 393,137; deposits, \$174,135,195; and resources, \$184,480,698. The exchanges at the

clearing houses at Hartford and New Haven in the year ended September 30, 1900, aggregated \$206,702,591, a decrease of \$14,595,210 from the previous year.

Railways—Steam.—The report of the railroad commissioners for the fiscal year ended June 30, 1900, shows that the length of main line and branches was 1013.35 miles. Parallel tracks and sidings gave a total mileage of single track of 1821.27, an increase of 2.06 miles of sidings during the year. The number of passengers carried was 53,352,417, an increase in a year of 3,082,949; freight hauled aggregated 17,393,459 tons, an increase of 1,501,817 tons; passenger revenue, \$17,158,660; freight revenue, \$20,630,051; average receipts per passenger per mile, \$0.01785; average receipts per ton of freight per mile, \$0.014. **Street.**—The total length of main line, June 30, 1900, was 470.97 miles, an increase of 54.7 in a year. The gross earnings were \$3,297,405; operating expenses, \$2,031,507; net earnings, \$1,265,998; number of passengers carried, 64,109,819; average revenue per passenger, \$0.0514; and average cost of transporting each passenger, \$0.0317.

Education.—The State Board of Education, in its annual report for 1900, places the school population at 189,717, and the total enrolment in the public schools at 151,325. The average attendance of pupils was about 110,000. The teachers numbered 4079, of whom 3692 were women. The expenditures for school purposes in 1899 were \$3,120,516, as compared with \$2,986,163 in 1898; and the cost per pupil in attendance was \$24.20 in 1899 as against \$25.03 in the preceding year. Private schools numbered 177, and had 923 teachers and 30,083 pupils enrolled. For advanced education there were 76 high schools, with 355 teachers and 7867 students, 3 normal schools with 529 students, and 19 evening schools with 108 teachers, 3721 pupils enrolled, and an average of 1215 pupils in attendance. Of the 1546 schools in the State, 771 had libraries, which contained an aggregate of 158,073 volumes. The number of public libraries in the State was 148.

Finances.—Receipts of the State Treasury for the fiscal year ended September 30, 1900, were \$2,876,857, and expenditures, \$2,528,514. The total funded debt was \$3,140,100; civil list funds amounted to \$1,031,226, reducing the actual State debt to \$2,108,873. The chief sources of revenue were: steam railroads, contributing \$975,143; savings banks, \$418,780; life insurance companies, \$291,067; and inheritance tax, \$165,930. The total assessed valuation of property in 1900 was \$570,163,749, an increase of \$17,275,987 over the valuation for 1899.

Population.—According to the United States census: In 1890, 746,258; in 1900, 908,355; increase during the decade, 162,097, or 21.7 per cent.

Elections.—In the State election of 1900 the Republican nominee for governor, George P. McLean, received 95,822 votes, and the Democratic nominee, S. L. Bronson, 81,420. The Legislature of 1901 will consist, in the Senate, of 22 Republicans and 2 Democrats, and in the House of 201 Republicans and 54 Democrats. In 1899 there were 20 Republicans and 4 Democrats in the Senate, and 180 Republicans and 72 Democrats in the House. The four congressional representatives from Connecticut, all Republicans, were returned at the State elections. McKinley's plurality was cut down from 53,000 in 1896 to 28,000 in 1900.

State Officers and National Representatives.—State officers for 1900: Executive—governor, George E. Lounsbury; lieutenant-governor, Lyman A. Mills; secretary of state, Huber Clark; treasurer, Charles S. Mersick; attorney-general, Charles Phelps; adjutant-general, Louis N. Van Keuren; insurance commissioner, Edwin L. Scofield—all Republicans.

Judiciary.—Supreme Court of Errors: Chief justice, Charles B. Andrews (Rep.); associate justices, David Torrance (Rep.); Frederick B. Hall (Rep.); Simeon E. Baldwin (Dem.); and William Hamersley (Dem.); clerk, George A. Conant. Congressional representatives for 1900 (56th Congress): E. Stevens Henry (Rockville), N. D. Sperry (New Haven), Charles A. Russell (Killingly), Ebenezer J. Hill (Norwalk)—all Republicans. Senators for 1900 (56th Congress)—Orville H. Platt (until 1903), of Meriden, and Joseph R. Hawley (until 1905), of Hartford—both Republicans.

State officers and national representatives for 1901: Executive—governor, George P. McLean; lieutenant-governor, Edwin O. Keeler; secretary of state, Charles G. R. Vinal; treasurer, Henry H. Gallup; comptroller, Abiram Chamberlain; attorney-general, Charles Phelps; adjutant-general, Louis N. Van Keuren; insurance commissioner, Edwin L. Scofield—all Republicans.

Judiciary: Same as in 1900.

Congressional representatives for 1901 (57th Congress): Same as in 1900. Senators for 1901 (57th Congress): Same as for 1900.

CONRAD, JOSEPH, whose excellent sea-story *Lord Jim* was one of the popular English novels of 1900, is of Polish ancestry. His father took a leading part in the Polish uprising of 1863, and his grandfather was a soldier in Napoleon's Grande Armée. When he was 13 Joseph Conrad left Poland for France, and entered a merchant's house at Marseilles. From business he turned to the sea, and passed

through the various grades in the merchant service to that of captain, serving in different parts of the world, but chiefly in the Pacific and on the Borneo coast. He has steadily grown in fame since the publication of his first story, *Almayer's Folly*, in 1895; *An Outcast of the Islands* came out in the next year. *The Nigger of the Narcissus* was one of the sensations of 1897. *Tales of Unrest* (1898) won for him one of the prizes of £50 annually awarded by the *Academy* to writers of great promise, Sidney Lee and Maurice Hewlett being the other winners of the year. Mr. Conrad is one of the ablest living writers of the sea.

CONSUMERS' LEAGUE, NATIONAL, United Charities Building, New York City. President, John Graham Brooks; secretary, Mrs. Florence Kelley, 105 East Twenty-second Street, New York City. There are now consumers' leagues in nine States: New York, Massachusetts, Pennsylvania, New Jersey, Ohio, Michigan, Illinois, Minnesota, and Wisconsin. The National Consumers' League was represented in the Department of Social Economics at the Paris Exposition of 1900, and was awarded a gold medal for its exhibit. The first consumers' league was organized in New York in 1890, and the national league was formed late in 1898, and completed its first year of active work on May 1, 1900. A consumers' league, as officially set forth in recent league literature, is an association of persons who strive to do their buying in such ways as to further the welfare of those who make or distribute the things bought. The present immediate aims are to extend among all mercantile establishments the commendable conditions now existing in the best, and to abolish the sweating system. The latter is the special task of the National Consumers' League, in co-operation with the local leagues. It is sought to promote these ends by the use of (1) a standard of a "fair house," (2) a "white test," (3) a Consumers' League label, and (4) by promoting the enactment and enforcement of better laws relating to the conditions of employment. The Consumers' League of New York City has adopted the following standard of a fair house: Wages—A fair house is one in which equal pay is given for work of equal value, irrespective of sex. In the departments where women only are employed, the minimum wages are \$6 per week for experienced adult workers, and fall in few instances below \$3; wages are paid by the week; fines, if imposed, are paid into a fund for the benefit of the employees; the minimum wages of cash girls are \$2 per week, with the same conditions regarding weekly payments and fines. Hours—A fair house is one in which the hours from 8 A.M. to 6 P.M. (with three-quarters of an hour for lunch) constitute the working day, and a general half-holiday is given on one day of each week during at least two summer months; a vacation of not less than one week is given with pay during the summer season; all overtime is compensated for; wages are paid and the premises closed for the five principal legal holidays—viz., Thanksgiving Day, Christmas and New Year's Day, Washington's Birthday, and the Fourth of July. Physical Conditions—A fair house is one in which work, lunch, and retiring-rooms are apart from each other, and conform in all respects to the present sanitary laws; the present law regarding the providing of seats for saleswomen is observed and the use of seats permitted. Other Conditions—A fair house is one in which humane and considerate behavior toward employees is the rule; fidelity and length of service meet with the consideration which is their due; no children under 14 years of age are employed. All the fair houses, therefore, constitute a white list, which is furnished to buyers. The league label is used to enable the purchaser to distinguish garments made in factories approved by the league from those made under other conditions. Goods bearing the label of the Consumers' League are made in factories in which the State factory law is obeyed, overtime is not worked, children under 16 years of age are not employed, and no goods are given out to be made up in homes. Persons who disapprove of the sweating system express their disapproval by buying goods made under clean and wholesome conditions, as shown by the presence of the Consumers' League label. Seventeen important factories, in Maine, Massachusetts, Rhode Island, Pennsylvania, and Michigan, are using the label. Several leading houses in New York City have applied for the use of the label, but the council of the National Consumers' League has voted to grant the use of the label to no manufacturer in New York City until effective methods of enforcing the tenement-house provisions of the labor law are adopted by the Factory Inspection Department of New York State. The league is especially concerned over an industry so largely centralized in New York City as the garment trades, because goods made up in New York City are sold throughout the country, and because the league considers New York to be the greatest centre of the sweating system on the continent. The league reports that it does not appear that the factories now using the label sell their goods at higher prices in consequence, enlightened factory administration offsetting the increased expense incurred by the abolition of sweatshop working.

During the first year of its work the National Consumers' League has investigated the conditions of manufacture of white muslin underwear, and now possesses information concerning all the important, and practically all the unimportant, sources of

supply of the white muslin underwear produced in this country. Its work has included also the adoption of its label, and the education of purchasers by means of lectures, literature, and organization. It has brought about the formation of five of the State organizations named above, the new leagues being in New Jersey, Minnesota, Ohio, Michigan, and Wisconsin. The Wisconsin league was formed in consequence of an evening devoted to the subject of consumers' leagues at the biennial of the General Federation of Women's Clubs, held at Milwaukee in June. By August the new Wisconsin league had obtained for the employees in fifty stores and two factories, about 3500 persons, the Saturday afternoon and evening holiday. It had previously been the usage to keep open extra long on Saturday instead of closing early. Among positive results of the first year's investigation by the national league were a list of 15 factories whose product is recommended because made in accordance with the requirements of the league and bearing its label; a list of factories which meet the requirements but do not use the label because their owners are not yet convinced that the constituency of the league is sufficiently large and stable to justify them in undertaking the expense involved in using the label; and a list of those New York factories, already mentioned, to whom the league has declined for the present to grant its label, because of the incompetent state of the Department of Factory Inspection of the State of New York, and the vain endeavor to obtain from it, according to the official league report, that protection for the purchasing public from infection and contagion which the law clearly intends, but which the department does not, at present, afford. Attention is called, in this connection, to the effective work of the corresponding department in the neighboring State of Massachusetts. It is not accidental, it is further reported, that the majority of the factories using the label are in New England, the conditions of employment there being conspicuously better than in other parts of the country, and the New England manufacturers being keenly alive to the value of a stable organization of customers interested in the maintenance of enlightened conditions of work. In connection with the investigations carried on, the Consumers' League reports that "the fact has been brought to light that there are in New England manufacturers who have for varying periods of time (some of them for more than a generation) maintained excellent conditions of work with no recognition from the purchasing public of their effort to improve the most disorganized and demoralized of all our industries—the needle trades. These enlightened manufacturers have had to sustain the three-fold competition of manufacturers of their own grade (which may be called standard or normal competition); of the penal, reformatory, and charitable institutions which, having no pay-rolls, are able to take contracts at very low prices indeed; and finally and most destructive of all, the competition of the sweating system, under which the workers are maintained during the dull season largely by public and private charity, and are paid such wages for skilled work during the rush season as ensure their remaining in the condition of semi-paupers. Under this three-fold competition it is not surprising that the number of factories found to be worthy to use the label of the Consumers' League in the first year of its work is small. Nor is it strange that some owners and managers of excellent factories remain sceptical as to the extent and permanence of the interest of a purchasing public which has been strangely slow to manifest its appreciation of the righteous efforts of the conscientious minority among employers in these trades." To the State leagues is left the work of promoting a market for labelled goods in their respective fields. In New York City there has been a retrograde movement, certain retail merchants, who are supposed to be profiting largely by the present state of the needle trades, resenting the efforts of purchasers to organize for the purpose of redeeming those trades. While there are retail merchants who carry goods bearing the league label, the year's work has shown that the sweating system is deeply entrenched in the retail trade. The enactment in June, 1900, of the Massachusetts law extending to women and children employed in mercantile establishments the restrictions of hours of labor which had previously applied only to employees in factories and workshops, was largely due to the efforts of the Consumers' League of Massachusetts. The hours of employment of women and children in that State are now fifty-eight in any one week, and ten hours in any one day.

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CONSUMPTION. See TUBERCULOSIS.

CONVICT LABOR. See CRIME.

COOK, CLARENCE CHATHAM, art editor and critic, was born at Dorchester, Mass., in 1828, and died at Newburg, N. Y., June 2, 1900. After having graduated at Harvard in 1849, he studied and taught architecture for several years. In 1863 he contributed a series of articles to the New York *Tribune* upon American art, and in 1869 became the Paris correspondent of that paper. Mr. Cook was among the early art critics of the United States, and was an authority upon archæology and antiques. Among his published writings are *The House Beautiful*, *Beds and Tables*, and *Stools and Candlesticks*. He edited Lübke's *History of Art*, and was for some time editor of the *Studio*.

COOK ISLANDS, a group of nine islands, situated in the Pacific, some 700 miles southeast of Samoa, which were under British protection from 1888 to 1900. In September of the latter year it was reported that at a meeting of the native chiefs of Raratonga, the principal island, it had been decided to ask Great Britain to annex the islands. On October 8, 1900, Lord Ranfurly, governor of the colony of New Zealand, in pursuance of an act of Parliament, annexed the islands to that colony. There is now a British resident in Raratonga, paid by the New Zealand government. The natives, who are Christians, petitioned Great Britain for annexation as long ago as 1864. Raratonga is about 53 miles in circumference, and has a population of about 3000. The total population of the islands is about 8000, of whom not more than 200 are Europeans. The soil of the islands is fertile and the climate healthful. In 1899 the revenue and expenditure amounted to £1801 and £1402 respectively; imports and exports, £13,355 and £14,219 respectively. The principal exports were copra (which represented the value of nearly half the whole), pearl-shell, coffee, oranges, bananas, and limejuice; and the chief imports were textiles, hardware, groceries, and preserved meats.

COOPER UNION FOR THE ADVANCEMENT OF SCIENCE AND ART, New York City, founded by Peter Cooper, and chartered in 1857. The forty-first annual report, submitted May 31, 1900, records in detail some recent notable gifts. Among these is a gift of valuable coal lands in West Virginia, given by the late John Halstead, the proceeds of which, although not immediately available, will ultimately yield, it is estimated, between \$200,000 and \$300,000. On January 1, 1900, the trustees accepted the endowment of \$300,000 offered by Andrew Carnegie for the establishment of a mechanics arts day school, in pursuance of the wish of the founder that such a department should be established as soon as funds should be available. In a personal interview with Mr. Carnegie, Mr. Edward Cooper and Mr. A. S. Hewitt undertook to arrange with him for \$10,000 per annum to be added to the \$15,000 which Mr. Carnegie's gift would yield. In addition to the \$25,000 per annum thus employed, there will still remain to be made an expenditure for the new office of the general superintendent, who should be able to organize and assist in the scheme of lectures and instruction in the university extension system. The trustees expect to continue the arrangements which have been made with the Board of Education, Columbia University, and the People's Institute for these university extension courses of lectures. They record that probably nowhere in the world have so many persons been provided free access to literary, political, and scientific instruction as was given during the winter of 1899-1900 in the great hall of Cooper Union. It is believed that fully 10,000 persons have attended these lectures during each week of the season. The ordinary income of Cooper Union for the year ending January 1, 1900, was \$58,489.78. The endowment of the institution on the same date was \$2,022,450. President, Edward Cooper; secretary, Abram S. Hewitt.

COPPER. The production of copper in the United States during 1900 showed an increase over that of 1899, which, however, was not as great as the conditions at the beginning of the year seemed to warrant. The estimated production of fine copper during the year 1900 is stated at 615,887,360 pounds, as compared with 585,342,124 pounds in 1899. The increase came, in the main, from the new and smaller mines and from the treatment of ores where copper is obtained along with more precious metals. The amount produced by the larger companies in the United States, and this same statement holds good for foreign mines also, has shown but little change during the year. The mines of Arizona, which produce about one-fifth of the copper mined in the United States, show an increase; but those of Montana, which yield about twice that quantity, exhibit a slightly diminished production, owing largely to extensive lawsuits and mine fires. Gains are reported from California and Utah, while the production of the Lake Superior district was almost the same as in the previous year. Copper ores are extensively imported into the United States for refining, especially from Mexico and Canada; and during the year 1900 there have been imports amounting to 54,329 tons, as against 31,637 tons in 1899. Large shipments are being received from Australasia, which are treated electrolytically at the refineries. Japan also sends copper ore to this country. The United

States has increased its exports of copper to a marked degree. In the year 1900, 338,121,071 pounds were exported, as against 246,826,331 pounds in 1899; and this country is now considered in a position to control the copper market of the world. The range of prices during the year is shown in the following table from the *Engineering and Mining Journal*:

AVERAGE MONTHLY PRICES OF COPPER IN NEW YORK.

Month.	1899.		1900.	
	Electrolytic.	Lake.	Electrolytic.	Lake.
January	14.26	14.75	15.58	16.33
February	17.02	18.00	15.78	16.08
March	16.35	17.54	16.29	16.55
April	17.13	18.43	16.76	16.94
May	17.20	18.25	16.34	16.55
June	16.89	17.93	15.75	16.00
July	17.10	18.33	15.97	16.16
August	17.42	18.50	16.35	16.58
September	17.34	18.46	16.44	16.69
October	16.94	17.76	16.37	16.64
November	16.49	16.93	16.40	16.80
December	15.85	16.40	16.31	16.88
Year	16.67	17.61	16.19	16.52

In January, 1900, the visible supply of copper was stated at 22,817 tons, which increased to 29,222 tons on December 1. The increase in electrical undertakings, including several ocean cables, demands large supplies of this metal, and at present important mines in various parts of the world are being developed.

The following figures, taken partly from official and partly from private reports, show the production of copper in long tons by countries in 1898 and 1899:

	1898.	1899.		1898.	1899.
Algeria	50	.....	Italy	3,435	3,000
Argentina	125	65	Japan	25,175	27,560
Australasia	18,000	20,750	Mexico	15,668	19,335
Austria-Hungary	1,540	1,505	Newfoundland	2,100	2,700
Bolivia	2,050	2,500	Norway	3,615	3,610
Canada	8,040	6,732	Peru	3,040	5,165
Cape Colony	7,060	6,490	Russia	6,000	6,000
Chile	24,850	25,000	Spain and Portugal	53,225	53,720
England	550	550	Sweden	480	520
Germany	20,085	23,460	United States	239,241	265,156
			Total	434,329	473,818

It is seen from this table that more than half of the world's supply of copper is produced by the United States.

Among the recent publications is one by Grant (*Bulletin 6, Wis. G. S.*), showing that Douglass County, Wis., contains copper-bearing rocks very similar to those found on Keweenaw Point, Mich.

In a series of experiments made by A. L. Colby it is shown that small percentages of copper exert no injurious effect on the physical properties of steel. A steel shaft 15 inches in diameter and 14 feet long, containing .565 per cent of copper, was forged without difficulty. Several test specimens were bent over flat in the cold, and showed after this no cracks or flaws, while their tensile strength ranged from 64,080 pounds to 68,010 pounds per square inch. The contraction of area in this test was 46.32 to 56.44 per cent., and the elongation in 2 inches was 28.5 to 34 per cent. In other cases experiments made on merchant bars, rails, and nickel steel, all containing small amounts of copper, .397 to .486 per cent. in the first two cases and .089 per cent. in the last showed no evidence of the material being "red short," or incapable of being worked at red heat.

COPRA. See COCOA-NUT-PALM PRODUCTS.

COPYRIGHT, INTERNATIONAL. The twenty-second international congress of literary and artistic property was held at Paris from July 16 to 21, the members meeting in session at the "Hotel du Livre" of the Cercle de la Librairie. There were present official delegates from Belgium, Ecuador, France, Mexico, Norway, Russia,

Spain, and the United States, the latter country being represented by Thowald Solberg, chief of the copyright division of the Congressional Library. There were also a number of unofficial delegates who took part in the discussions, including the officials of the International Copyright Bureau at Berne. M. Georges Leygues, minister of public instruction of France, presided at the opening session. The principal business before the congress was the discussion of a "type" law which should serve as a model in attempts to secure a unification of existing and future legislation on the subject of international copyright. This matter was by no means new, as it had been brought before previous congresses at Dresden in 1895; Berne, 1896; Monaco, 1897; and Turin, 1898. After discussions, participated in by writers, dramatists, composers, artists, and publishers, a type law was prepared which should serve as a basis for future legislation on the rights of the author, and presented to the congress. This law, after careful consideration, was adopted, and is in outline as follows: To the author of a work of the intellect, without regard to his nationality or the place of first publication of his production, is reserved the exclusive right to publish or reproduce such a work by whatever process or for whatever purpose he desires. This right applies to all manifestations of thought, written or spoken, including contributions to the press, dramatic, musical and choregraphic productions, and all works of painting, drawing, sculpture, etc., independent of their merit, use, or destination. The exercise of this right should not be subordinated to the accomplishment of any formalities, and any reproduction, in whole or in part, modification, translation, or rearrangement without the consent of the author or his heirs is illegal. The term of copyright is fixed at the life of the author and eighty years after his decease, all benefits during this latter time accruing to his heirs. This recommendation, it may be said, is an intermediate step between the perpetual copyright desired by certain extremists and the short-term laws now generally in force. The new law would give the author the control and right of reproduction independent of the right of property in the material object, and it also enables him to scrutinize the reproduction of his work and to sue an infringer. The congress also adopted a number of resolutions looking to the possible amendment of the Berne Copyright Convention, of which the most important were the protection of architects' work, the stipulation that the transfer of a work of art shall not involve the assignment of the right of reproduction, and the provision of criminal law penalties for the appropriation of an artist's name or any distinctive mark adopted by him.

The congress, in discussing the copyright laws of the different nations, criticised those of the United States, and expressed the hope that Congress would repeal such provisions of the present law as prevented the United States from participating in the Berne International Copyright Union. It is also interesting to note that the congress decided that photographic works were entitled to the same protection as the graphic and plastic works of art, and that the artist has a right to demand the placing of his name on his work. The reproduction of press dispatches pure and simple should also be forbidden when it takes the form of unfair competition. The next congress will be held at St. Petersburg in 1901. See CANADA.

COREA, a kingdom of easternmost Asia, is bounded on the north and northwest by Manchuria, on the west by the Yellow Sea, on the south by the straits which separate it from Japan, on the east by the Japan Sea. It has an area of approximately 82,000 square miles, and a population variously estimated at from 8,000,000 to 16,000,000. Native statistics in 1899 gave only 5,340,901 inhabitants, but a later count increased the figure to 10,528,937. In 1899 there were in Corea 20,000 foreigners, of whom the Japanese numbered 16,500; the Chinese, 3000; Americans, 265, English, French, Germans, and Russians below a hundred each. The largest towns are Seoul, the capital, with 201,000 inhabitants; Ping-Yang, with 40,000; and Chemulpo, with about 12,000. Confucianism is the religion of the state and of the higher classes; the mass of the people hold to a sort of degenerate Buddhism, and believe in fetishism fervently. The Christians comprise about 30,000 Catholics and 4000 Protestants, the latter the converts almost entirely of American missionaries. Instruction by the state is moderately well provided for on paper, but in reality is non-existent. The only efficient schools are those managed by foreigners. The government is a monarchy. The emperor rules with the aid of a cabinet, which has both legislative and executive power; the administration is uniformly corrupt. Reforms, however, were introduced in 1895 by Japan, which has done much to render some stability to the finances of the country and to remedy abuses in the Household Department. Though nominally independent, the monarch is merely a shuttlecock in the political game going on between Russia and Japan, which alternately control the country through their diplomatic representatives and creatures at court. There is not the least consistency in domestic rule or foreign affairs, for the ministers of the emperor and the officials are always amenable to purchase or persuasion by force. As a factor in the Oriental problem Corea derives its importance from its position as buffer state

between Japan and Russia, for whom it is almost certain to become a source of contention.

Agriculture and Commerce.—The economic prosperity of Corea depends on its rice crop, the chief staple of the country. A good harvest makes trade brisk, a very poor one brings it to a standstill. Wheat, beans, and ginseng are also raised; and the production of the last has grown considerably since the introduction by the Japanese of improved methods of cultivation. Commerce, which increased steadily from 1895 to 1898, showed a decided falling off in 1899. The rice crop had failed in the spring, and there was no trading for nine months. Lively business in the last quarter of the year failed to bring up the average. The total value of the foreign and coast trade in 1897, including the precious metals, was 23,571,350 yen (yen equals 50 to 51 cents); in 1898, 24,702,237 yen; in 1899, 22,074,669 yen. In merchandise the diminution for the year amounted to 3,185,225 yen, of which 1,517,439 yen fell on the imports, 711,614 yen on the exports, and 956,142 yen on the coasting trade. In the last case, however, it was rather a displacement of trade than a falling off; for, as a very considerable part of the coasting fleet was employed in the transportation of goods intended for export, from closed ports to treaty ports, the opening of a number of harbors to foreign commerce naturally dispensed with the necessity of much of this inter-city traffic. The chief articles of import are cotton goods (more than one-half of total), woollen goods, metals, oil, railway material, salt, silks, and sewing machines. The petroleum comes almost entirely from the United States, against which Russia has shown itself unable to compete, and it is a significant fact that the value of American oil imported in 1899 increased by \$80,000, though general imports had decidedly declined. The principal articles of export are rice, beans, ginseng, cowhides, and paper. Gold is also exported in considerable quantities, in 1897 to the value of 2,084,079 yen; in 1898, 2,375,725 yen; in 1899, 2,993,382 yen. The imports of the United States from Corea in 1899 were worth, according to official reports, \$708, and the exports to Corea about \$130,000, though the value of the unreported trade would greatly increase the figures. The chief commodities sent there were petroleum and railway material. The bulk of the nation's commerce is with Japan and England, the latter acting through Chinese factors. Of late the rivalry between the two has become sharp, and Japan has come off the better in the struggle, almost monopolizing the export trade and beating Great Britain in the cotton goods market by offering merchandise of equal quality at lower prices. The fluctuation in the coinage exerts a depressing effect on the market; the debasement of the *sen*, due partly to governmental action and partly to the dishonesty of the directors of the mint, has established a discount of 10 to 50 per cent. in favor of gold. So unstable, in fact, has the currency of the country become that Japanese gold and silver coin has been generally made the medium of exchange in foreign trade and is the only kind of money received in payment of customs. Revenue is derived from a land and a house tax, customs, and export duties on ginseng and gold dust. In 1899 the estimated income was 6,473,222 yen, and the expenditure 6,471,193 yen, the leading items of expense being the interior, war, and Household departments. Taxes weigh heavily on the population, and are made more onerous by the system of extortion practised by the local officials, who are absolute in their districts. The customs are under an English administrator, and are pledged for the payment of a debt of over 1,000,000 yen to Japan and a smaller sum to China. The carrying trade is in the hands of the Japanese, who run well-equipped lines of steamers from the islands to the peninsula, and make Fusan, on Corea Strait, a port of entry for vessels going from Vladivostock to Shanghai. In 1898 the harbor entries comprised 3366 ships of 659,970 tons, of which 70 per cent. were Japanese. In 1899 the entries were 1666 steamers of 746,020 tons and 2049 sailing vessels of 68,364 tons. Of the steam bottoms, 602,227 tons, or more than 80 per cent., were Japanese, showing a gain of nearly 15 per cent. in one year. This rate of increase is sure to be accelerated in the future, for the merchant fleet is being continuously swelled by ships of heavy tonnage, built in accordance with admiralty regulations, and approaching in excellence the products of European and American shipyards. On May 1, 1899, three more ports were opened to the foreign trade—Kunsan, Masampo, and Songchin—making in all nine free ports of entry. A treaty concluded with China in December, 1899, in which no favored-nation clause was inserted, was considered harmful to the interests of Great Britain, as all her trade is carried on from Shanghai and Hong Kong and passes through Chinese hands. In 1899 the railway line between Seoul and Chemulpo, some thirty miles long, was completed, and was sold by the builders, an American syndicate, to a Japanese company. Its operation has proved successful, since it has absorbed the entire passenger traffic between the two towns, and competes with the river boats for the transportation of freight. Railway lines are projected from Seoul to Wiju, to Mokpo, and, most important of all, to Fusan. (See JAPAN.) In Seoul an electric tramway is being run at a satisfactory profit to the company, though at an

increased rate of mortality to the population, which in 1899 manifested its hostility by the riotous destruction of track and rolling stock. Telegraph lines connect the capital with Fusan, Chemulpo, Wonsan, and the Chinese system. In 1899 Corea became a member of the postal union, but the inefficiency of native officials causes all important business correspondence to be carried on through Japanese post-offices.

Production and Industry.—Corea's brightest economic prospects consist in the future development of her mineral resources. Coal, lead, silver, and copper are found in moderate quantities, and sufficient iron is produced to supply the home demand. Gold, however, is the most important mineral product. According to one authority, experts in Corea have declared that the gold fields there resemble the country of the Witwatersrand (Johannesburg) in formation and promise. According to the most conservative opinion, the mines of Corea, though not enormously valuable, are rich in comparison with the economic resources of the country. Serious work began after the Chinese-Japanese War of 1895, when concessions were granted to Japanese, American, English, and German promoters and syndicates. On the American concession over 1300 men were engaged at work in 1899 with gratifying results. Great Britain's operations were also successful. In 1899 Russia demanded of the Korean government that she alone be made in future the recipient of grants of mining lands; Japanese influence prevailed, and the emperor refused to accede to the demand. The greatest need in the mining districts is machinery, which must come from America or Great Britain, and coal, which, owing to the difficulty of transportation over Corea's dreadful ways, brings excessive prices. Dynamite is fast becoming a leading article of import, and buildings for storing large quantities of the explosive were put up in 1899 by the various companies. The only important manufacture of Corea is paper, and that is not very considerable; the quality of the product, however, is superfine, and the industry is easily capable of being developed to large and profitable dimensions. The valuable coast fisheries are controlled by the Japanese, who have the exclusive right of operating within the three-mile line. The whale fishery is in the hands of the Russians, who catch their whales, salt them, and sell them for food in Japan.

Recent History.—The ascendancy in Korean politics passed in 1900 from Japan to Russia, whose undisguised attempts to extend her influence in the country threatened at the end of the year to bring on war between the two Powers. In the spring of 1900 Mr. Pavloff, Russian representative at Seoul, demanded that the government cede Atkinson's Point as a station to the Russian steamship Company. Atkinson's Point commands the entrance into Masampo Harbor, the finest in Corea, situated on the strait to the west of Fusan. It was further demanded that the island of Koje-do, situated in the strait of Corea, between the mainland and Japan, should never be alienated to any other nation. The importance of the two positions claimed was of the first order, and Japan vehemently opposed the cession. Russia abated somewhat in her terms, agreed to take treaty land in the harbor of Masampo, but insisted on the inalienability of Koje-do; and in May a convention embodying these grants was signed. Japan viewed with alarm the establishment of her rival on the south coast of the peninsula directly opposite her own territory, and the report that Masampo was to be made a summer rendezvous for the Russian fleet seemed to increase the danger of the situation. The loss of Koje-do to Japan was serious, for the strategic value of the place, commanding as it does the route from Vladivostok to Port Arthur, was great. Simultaneously with her aggressive policy on the coast, Russia carried on extensive preparations on the Manchurian border. The railway branch from Port Arthur, that is ultimately to connect with the trunk line of the Siberian road, was being rapidly laid down, and it was expected that by the end of 1900 communication would be established with Vladivostok by means of the railway and the tributaries of the Amur River. Along the whole land frontier of Corea, therefore, Russia was establishing a formidable military line which would hold Corea at her mercy. To strengthen the exposed end of this line immense fortifications were begun at Port Arthur, where one hundred thousand coolies were kept at work making the place impregnable. The storing of large quantities of arms and provisions at Port Arthur tended to indicate that a conflict with Japan would not come unexpected to the Russian authorities. For details of relations between Russia and Japan concerning Corea, see JAPAN.

CORELLI, MARIE (Marion Mackay), a popular novelist of a mystical turn of mind, was born in 1864 of Gaelic and Italian parentage, and is the adopted daughter of Charles Mackay, *littérateur* and writer of songs. The late Erie Mackay, the poet, was Miss Corelli's step-brother. She was educated partially in England and partially in a French convent, where the religious life fostered her love of mysticism. *Barabbas, a Dream of the World's Tragedy* (1893), a book dealing with the crucifixion of the Christ, was the fruit of the religious inspiration of these years. *The Romance of Two Worlds*, her first book, received little newspaper notice, but acquired

great popularity. Since the appearance of that book in 1886 Marie Corelli has written several novels which have had a very large circulation, and have been translated into various languages, including Russian, Greek, and Hindustani. Besides the novels already mentioned, the list of her works includes *Vendetta* (1886); *Thelma* (1887); *Ardath* (1889); *The Soul of Lilith* (1892); *Wormwood* (1893); *The Sorrows of Satan* (1895); *The Mighty Atom* (1896); *The Murder of Delicia* (1896); *Ziska, the Problem of a Wicked Soul* (1897); *Jane* (1897), and *Boy* (1900). The *Master Christian* (1900) deals largely with the internal organization of the Roman Church, the alleged immorality of its priests, and the supposed attempt of the Church to foster ignorance and superstition. Partly because of its theme and partly also on account of the impassioned style in which it is written, the *Master Christian* achieved considerable popularity.

CORN. The following table, published by the Department of Agriculture, division of statistics, shows the acreage, production, and value of corn in the United States in 1900:

STATES AND TERRITORIES.	CORN.				
	Acreage.	Yield per acre.	Production.	Value per bushel.	Total value.
		<i>Bushels.</i>	<i>Bushels.</i>	<i>Cents.</i>	<i>Dollars.</i>
Maine.....	12,229	36	440,344	55	242,134
New Hampshire.....	25,284	37	934,768	56	523,470
Vermont.....	48,477	40	1,939,080	50	969,540
Massachusetts.....	40,667	38	1,545,346	54	834,487
Rhode Island.....	8,197	32	262,304	67	175,744
Connecticut.....	46,610	38	1,771,180	55	974,149
New York.....	533,626	32	17,236,032	47	8,100,935
New Jersey.....	257,364	33	8,498,012	45	3,821,655
Pennsylvania.....	1,306,316	25	32,707,900	45	14,718,555
Delaware.....	208,763	24	5,010,312	38	1,903,919
Maryland.....	585,877	26	15,232,802	41	6,245,449
Virginia.....	1,761,485	16	28,183,760	49	13,810,002
North Carolina.....	2,462,515	12	29,790,180	67	16,980,466
South Carolina.....	1,875,591	7	13,129,137	64	8,402,648
Georgia.....	3,411,953	10	34,119,530	57	19,448,132
Florida.....	519,524	8	4,156,192	60	2,493,715
Alabama.....	2,668,722	11	29,355,942	58	17,026,446
Mississippi.....	2,293,818	11	25,231,998	58	14,634,539
Louisiana.....	1,453,094	17	24,702,596	50	12,351,299
Texas.....	4,553,495	16	61,968,910	47	29,522,558
Arkansas.....	2,360,313	19	45,225,947	43	19,447,157
Tennessee.....	2,649,694	20	56,997,680	49	27,928,961
West Virginia.....	714,804	27	19,299,708	50	9,649,824
Kentucky.....	2,664,124	26	69,267,224	40	27,706,290
Ohio.....	2,688,924	37	100,890,183	34	36,312,664
Michigan.....	1,080,235	36	38,898,460	37	14,388,730
Indiana.....	4,031,600	38	153,200,800	32	49,024,256
Illinois.....	7,180,898	37	264,176,226	32	84,536,392
Wisconsin.....	1,228,681	40	49,547,240	33	16,150,589
Minnesota.....	963,476	33	31,794,708	29	9,220,465
Iowa.....	8,048,946	38	305,859,948	27	82,562,186
Missouri.....	6,453,943	28	180,710,404	32	57,827,339
Kansas.....	6,624,770	19	125,970,680	32	40,338,602
Nebraska.....	8,093,464	26	210,430,064	31	65,233,320
South Dakota.....	1,200,697	27	32,418,819	29	9,401,456
North Dakota.....	23,824	16	381,164	42	160,067
Montana.....	1,566	15	23,970	59	14,142
Wyoming.....	2,403	34	81,702	60	49,021
Colorado.....	167,839	19	3,188,941	48	1,530,692
New Mexico.....	25,216	22	554,732	64	353,041
Arizona.....	.....	.....	.....	.....	.....
Utah.....	8,459	20	159,180	63	106,583
Nevada.....	.....	.....	.....	.....	.....
Idaho.....	.....	.....	.....	.....	.....
Washington.....	5,807	20	106,140	59	62,623
Oregon.....	13,789	23	317,147	57	180,774
California.....	54,079	25	1,351,975	61	824,706
Oklahoma.....	544,002	26	14,144,052	26	8,677,454
United States.....	83,930,872	25.3	2,105,102,516	35.7	751,290,034

The following statistics of the world's production are taken from the *Crop Reporter* for December, 1900, which is published at Washington by order of the secretary of agriculture:

CORN CROP OF THE WORLD, 1895-1899.

COUNTRIES.	1895.	1896.	1897.	1898.	1899.
United States.....	2,151,136,000	2,283,875,000	1,902,968,000	1,924,185,000	2,078,144,000
Canada (Ontario).....	25,602,000	24,830,000	25,441,000	24,181,000	22,356,000
Mexico.....	71,906,000	76,364,000	121,898,000	111,847,000	110,000,000
Total North America.....	2,248,644,000	2,384,969,000	2,050,302,000	2,059,713,000	2,210,500,000
Chile.....	9,000,000	9,000,000	8,000,000	9,932,000	9,000,000
Argentina.....	73,000,000	80,000,000	40,000,000	56,000,000	78,000,000
Uruguay.....	5,840,000	5,000,000	4,000,000	4,000,000	6,000,000
Total South America.....	86,840,000	94,000,000	52,000,000	69,932,000	90,000,000
France.....	36,168,000	30,426,000	30,401,000	23,495,000	30,000,000
Spain.....	15,714,000	18,352,000	17,000,000	18,000,000	24,667,000
Portugal.....	15,000,000	15,000,000	15,500,000	15,500,000	16,000,000
Italy.....	70,492,000	79,910,000	65,991,000	79,640,000	88,536,000
Austria.....	18,720,000	17,492,000	14,757,000	16,074,000	14,583,000
Hungary.....	142,745,000	128,866,000	102,229,000	124,682,000	118,807,000
Croatia Slavonia.....	17,454,000	17,617,000	14,102,000	20,457,000	14,106,000
Total Austria-Hungary.....	178,917,000	163,975,000	131,158,000	161,213,000	142,496,000
Roumania.....	71,323,000	65,428,000	79,753,000	101,907,000	27,721,000
Bulgaria and E. Roumelia.....	28,000,000	26,400,000	25,000,000	27,000,000	14,000,000
Servia.....	17,000,000	16,000,000	16,000,000	17,000,000	15,000,000
Russia.....	81,696,000	22,773,000	51,966,000	47,918,000	30,912,000
Total Europe.....	454,233,000	439,164,000	432,669,000	491,674,000	389,332,000
Algeria.....	493,000	451,000	450,000	393,000	300,000
Egypt.....	33,600,000	34,000,000	33,000,000	32,000,000	30,000,000
Cape Colony.....	2,378,000	1,650,000	2,761,000	2,061,000	2,858,000
Total Africa.....	36,471,000	36,101,000	38,211,000	34,394,000	33,158,000
Australasia.....	8,500,000	10,201,000	9,412,000	9,780,000	10,025,000

RECAPITULATION BY CONTINENTS.

North America.....	2,248,646,000	2,384,969,000	2,050,302,000	2,059,713,000	2,210,500,000
South America.....	86,840,000	94,000,000	52,000,000	69,932,000	90,000,000
Europe.....	454,293,000	439,164,000	432,669,000	491,674,000	389,332,000
Africa.....	36,471,000	36,101,000	38,211,000	34,394,000	33,158,000
Australasia.....	8,500,000	10,201,000	9,412,000	9,780,000	10,025,000
Total.....	2,884,750,000	2,964,485,000	2,582,584,000	2,665,498,000	2,733,015,000

Figures, commercial or official, for the corn crop of Central America and some of the countries in South America are unobtainable, but as the supply is exhausted by domestic consumption, these statistics are not important from a commercial point of view. Austria-Hungary ranks second among the corn-producing countries of the world. There, as in Roumania, corn is the principal cereal crop. Corn is also extensively cultivated in Portugal, Spain, southern France, Italy, Servia, Bulgaria, and southern Russia. European crops from 1895 to 1899 average 441,426,000 bushels per annum, or 16 per cent. of the world's production.

Of late attention has been specially drawn to the various economic uses to which corn may be put. At the Paris Exposition of 1900 an American exhibit of the products and by-products of corn comprised 45 distinct articles, including, besides the familiar food products, cellulose for packing coffer-dams of battle-ships, paper stock, cob, pipes, lager beer, table syrup, British gum, salves, laundry starch, table starch, frumentum, gum paste, corn oil, oil cake, grape sugar, gluten feed, glucose and confectioner's paste.

CORNELL UNIVERSITY, Ithaca, N. Y., founded 1868. Events contributing to the material advancement of the university during the college year 1899-1900 were the completion of the new medical college building in New York City, costing about \$1,000,000; and an anonymous gift of \$80,000 to erect on the Cornell campus a hall for anatomy and physiology, for the use of the underclass students in the duplicated medical courses at Ithaca. The total value of gifts received during the year amounted to \$139,350. The total value of property, including invested funds, is

about \$10,850,000. The income for the college year was \$722,210.68. The money pledged by alumni and students toward the erection of a university club-house, to cost \$150,000, had reached at the close of the college year the amount of about \$20,000, and arrangements have been made to increase the amount pledged so that ground may be broken during the summer of 1901. The notable mosaic decoration in progress in the chapel for two years was completed in 1900. The addition to the library collections amounted to 13,354 volumes and 1800 pamphlets. Among the 4219 books which came as gifts, were contributions from ex-President Andrew D. White, in the field of history; Professor T. F. Crane, incunabula, chiefly medical sermon books; Theodore Stanton, '76, of Paris, literature; and Professor Willard Fiske, of Florence, Italy, adding to the Dante collection. The total extent of the library is now 238,376 volumes and 38,400 pamphlets. The faculty during 1899-1900 numbered 314. Moses Coit Tyler (*q.v.*), professor of American history, died December 28. Professor W. F. Willcox was granted a leave of absence to act as chief statistician of the census. Miss M. F. Washburn, A.B., Ph.D., was appointed a new warden of the Sage College for Women. The number of students graduated was 465, and the total attendance, excluding 445 students in the summer session, and 83 in the winter school in agriculture, and excluding duplicates, was 2138, distributed as follows: graduate school, 174; academic, 680; law, 178; medicine, 333; agriculture, 88; veterinary, 30; forestry, 20; architecture, 43; civil engineering, 203; mechanical and electrical engineering, 571. In addition there were 26 students in the summer term in entomology, and 15 in the summer term in paleontology. Some 160 graduates of other colleges were enrolled in undergraduate courses, and 144 graduates were studying in the summer session. In the graduate department 100 were studying for the Ph.D. degree.

In the academic or A.B. course, where all subjects have, under certain conditions, been elective since 1897, interest centres upon the use which students are making of the privilege of unrestricted selection of their studies. Thirty-one per cent. of the class entering in September, 1899, offered Greek and Latin for entrance (group A), 40 per cent. Latin and German, and 19 per cent. Latin and French (group B), and 10 per cent. German, French, and mathematics (group C). More than sixty per cent. of the Arts freshman's time was devoted to linguistic studies, and 10 per cent. of it to mathematics. The record of the other classes shows that in each succeeding year of his course these subjects occupy less of the student's time, while those subjects, historical and philosophical, for which a knowledge of languages and mathematics is preparatory, occupy more time. At the same time languages continue to occupy considerable time, while it is a point against the opponents of the elective system that the time devoted to science should actually decrease. The average degree of preparation on the part of freshmen presenting Greek at entrance is reported as steadily rising. Among other features of university work, as noted in the president's report, are the continued increase in the number of students in the veterinary college, now larger than in any other veterinary school in the country, and the amount of research and investigation which the department has been called upon to perform. The College of Agriculture, in its university extension work, had 25,000 teachers studying under its direction during the college year, besides 35,000 pupils and 2500 other residents of New York State. The experiment station distributed 12 bulletins, of 20,000 copies each, among the farmers of the State. For the work of the College of Forestry, see FORESTRY. See also PSYCHOLOGY, EXPERIMENTAL, and UNIVERSITIES AND COLLEGES.

CORPORATIONS. See POLITICAL AND SOCIAL SCIENCE, AMERICAN ACADEMY OF.

CORRÊA, JOAO ARTHUR DE SOUZA, Brazilian minister to England, died in London March 23, 1900, at the age of 64 years. He was born in Brazil, and after being educated in France, became a lieutenant in the Brazilian navy. In the Crimean War he fought with the Foreign Legion, winning medals from both England and France. In 1859 he entered the diplomatic service as an attaché to the Brazilian Legation at the court of St. James; in 1863 he was transferred to a similar position in Paris, and in 1867 returned to London, where he remained as first secretary until 1885. In this year he was appointed minister to Spain, and afterward was sent to the pope's jubilee at Rome as envoy extraordinary and minister plenipotentiary. After the establishment of the republic he was appointed in 1890 minister at London, and in 1899 was also accredited to The Hague. He was succeeded at London by Joaquin Nabuco.

COSTA RICA, the most southern country of North America, is a republic extending from Nicaragua to Colombia between the Caribbean and the Pacific. The capital is San José.

Area, Population, and Education.—The republic consists of five provinces and two territories, the total estimated area of which is 23,000 square miles. The estimated population in 1897 was 294,940, and in 1899, 310,000. It is not unlikely that the latter

figure is too high. Of the rural inhabitants very few are of pure European descent. Approximate populations of the principal towns are: San José, 30,000; Cartago, 12,000; Alajuela, 10,000; Puntarenas, 8000; Heredia, 6050; Liberia, Santa Cruz, and Nicoya, each 5000; Limón, 4000. Immigration is encouraged by the government, but though greater than that to the other Central American countries, is small, averaging about 1000 yearly.

The principle of religious liberty prevails, though the state religion is Roman Catholic, and Roman Catholicism is the faith of most of the inhabitants. Public instruction is free, and not only nominally but actually compulsory. Most of the Latin-American countries have laws for compulsory education, but these, with the usual Latin-American negligence, are seldom enforced. Accordingly, the attitude of Costa Rica is as remarkable as it is commendable. Besides the primary schools there are several institutions for higher education. The attendance at the former in 1897 was about 22,000. In 1900 the reported number of newspapers published was 10, of which 8 were in San José.

Government.—By the constitution the chief executive authority is vested in a president, who is chosen through the medium of an electoral college for a term of four years, and is assisted by a cabinet of four members. The president in 1900 was Señor Rafael Yglesias, who was re-elected in November, 1897. The legislative power devolves upon a house of representatives, the members of which are chosen by electoral colleges in the proportion of one representative for each 8000 inhabitants. The electoral colleges are chosen by the vote of self-supporting citizens. Besides local justices and inferior courts, there are a court of cassation, two appellate courts, and a supreme court. As all able-bodied citizens between the ages of 18 and 50 are liable to military service, the war footing of Costa Rican troops may be placed at 34,000. The regular army numbers 600 men and the militia 12,000.

Finance.—The principal sources of revenue are customs and excise. The silver peso and the gold colon, the new monetary unit, are each worth 46.5 cents. For fiscal years the revenue and expenditure in pesos have been as follows:

	1896.	1897.	1898.	1899.
Revenue.....	6,528,975	7,435,611	8,424,104	8,413,198
Expenditure.....	6,187,927	6,697,327	8,313,454	8,069,748

The estimated expenditure for the fiscal year 1901 was 6,760,708 colones. Amortization of the foreign debt, which in 1899 amounted to \$10,169,440, will begin in 1917 at the rate of \$48,660 (£10,000) annually. The internal debt in 1899 was reported to be about 2,922,000 pesos.

On October 26, 1896, upon the initiative of President Yglesias, a law was enacted for the establishment of a gold monetary standard at the ratio of 26 $\frac{3}{4}$ to one as compared with silver, the gold colon (46.5 cents) being made the unit of value. The plan could not be put in immediate operation, but the government set about securing a gold reserve for the redemption of outstanding paper. By enactments of June 24, 1899, the congress authorized the executive to negotiate a private loan not exceeding £200,000 (\$973,200), to be converted into the national gold coin, the security offered being 60,000 ordinary shares of the Costa Rican Railway, owned by the nation. Since an amount of the gold colones had been coined sufficient for commercial purposes, on April 17, 1900, a governmental decree was promulgated ordering the redemption in gold of gold certificates at the Bank of Costa Rica on and after the 15th of the following July, and placing the existing silver peso at par with the gold colon. In his message to the congress, May 1, 1900, President Yglesias announced that the total metallic circulation of the country would amount to about 5,000,000 gold colones and 1,000,000 silver pesos, and reported a favorable outlook for the gold standard, since the rate of exchange fell rapidly after the decree of April 17. This promise was to some extent realized when later in the year the new system met the satisfaction of both the government and the people. The metallic reserve was thought sufficient to warrant the circulation of 3,000,000 colones in bank-notes of the Bank of Costa Rica, redeemable in gold. This bank has ceased to have a monopoly of bank-note issue, but the issues of other banks, though redeemable in gold upon presentation, are not a legal tender. The colon is coined in denominations of 5, 10, 15, and 20. Gold coin of the United States, Great Britain, Germany, and France are a legal tender in the republic.

Industries and Commerce.—Agriculture is the principal industry of Costa Rica, which is one of the more prosperous Latin-American countries. The prosperity of Costa Rica is in part due to the fact that its soil is largely owned by small landholders. Almost any product can be successfully raised, but coffee and bananas are the principal crops, while corn, rice, potatoes, and cacao are cultivated to a considerable extent. Rubber also is produced. The rearing of cattle is an important industry, and in 1897 the live stock was valued at about 12,695,000 pesos. Parts of the country are rich in gold, and silver also occurs. Coffee is by far the most important export;

other exports are bananas, hides and skins, and cabinet woods. The leading imports are cotton goods and other textiles and iron and steel ware. The coffee export in 1898 amounted to 19,486,125 kilogrammes, valued at \$4,209,569. The production and export in 1899 were smaller in quantity but more valuable than in the previous year; the export in the commercial year 1900 was reported at about 16,000,000 kilogrammes. About 80 per cent. of the coffee export is sent to Europe, 56 per cent. going to England and about 16 per cent. to Germany; the remaining 20 per cent. goes to the United States. Banana production continues to increase, the export, almost all of which goes from Port Limón to New Orleans and New York, being in 1898, 2,331,036 bunches and in 1899, 2,962,771 bunches. The percentages of the imports by countries for 1898 and 1899 respectively are: United States, 44.8 and 54; Great Britain, 19.6 in each year; Germany, 15.6 and 14.5; France, 10.8 and 5.9. The value of the foreign trade in United States money for fiscal years ending March 31 have been as follows:

	1896.	1897.	1898.	1899.	1900.
Imports.....	\$3,851,460	\$4,748,812	\$5,460,944	\$4,258,896	\$4,136,707
Exports.....	5,188,401	5,597,727	5,474,773	5,659,218	4,929,955

Communications.—A railway 117 miles in length connects Port Limón with Alajuela by way of San José, and another line 14 miles long extends from the Pacific port Puntarenas to Esparita. Rail communication between the Atlantic and Pacific coasts is regarded to be of great economic importance; and, accordingly, a line connecting the inland terminals is under construction. Also the Pacific Railway, 59 miles in length, connecting San José with Tivives, a port at the mouth of the Gulf of Nicoya, somewhat south of Puntarenas, has for several years been in process of construction under the direction of the government. The value of the work accomplished in 1899 was \$476,000. In 1897 there were 917 miles of telegraph lines. Limón, the only important seaport on the Atlantic coast of the republic, the harbor of which was improved in 1899 at large expense, was practically destroyed by fire on October 13, 1900, the loss being estimated at \$2,000,000.

Threatened Invasion.—In March, 1900, trouble between Costa Rica and Nicaragua seemed imminent through the appearance of Frederico Mora, an ex-convict at Sing Sing, N. Y., in command of an armed force of 2000 Nicaraguans, who, it was alleged, purposed an invasion of the former country. Costa Rica sent 3000 men to the frontier. Though Nicaragua disavowed responsibility for the Mora movement, war seemed not improbable; and as the fighting would naturally take place near the route of the Nicaragua Canal, the United States cruisers *Marblehead* and the *Detroit* were sent to protect American interests, while Admiral Kautz was instructed to tender his good offices for the maintenance of peace. About the last of March another expedition under General Emanuel Herrera landed at David, a Colombian town on the Pacific coast and near the Costa Rican boundary, and again the Nicaraguan government disavowed responsibility. No serious results seem to have been brought about by either expedition.

Boundary Settlements.—The Nicaraguan boundary question was settled on July 24, 1900, when the decision of General Edward P. Alexander, the arbitrator appointed by President Cleveland with the consent of Nicaragua and Costa Rica, was rendered, and was approved by representatives of the two governments. The bays of Salinas and San Juan del Norte were made common to both countries. On September 16, 1900, it was announced that the president of France, the arbitrator of the boundary dispute between Costa Rica and Colombia, had decided that the frontier between the two republics should be formed by a line starting from Cape Mona, on the Atlantic coast, and in a generally southerly direction, following the cordillera to the ninth parallel. Thence the boundary follows the watershed between Chiriqui Viejo and the tributaries of the Golfo Dulce, terminating at Punta Burica, on the Pacific. Accordingly, the new boundary line runs nearly north and south. The small islands northwest of Punta Mona were awarded to Costa Rica, and those to the east and southeast to Colombia. The more distant islands between the Mosquito coast and Panama were also given to Colombia. In the Pacific the Burica Islands and all islands east of Punta Burica were awarded to Colombia, while those west of Punta Burica were given to Costa Rica.

COTTON AND THE COTTON INDUSTRY. At the Paris exhibition the grand prize for cotton and other fibres was awarded to the United States Department of Agriculture. The growing popularity of *mercerized cotton* has added considerably to the cotton trade of the past few years. The process was invented by John Mercer, an English chemist, in 1850. He discovered that caustic soda and caustic potash have a peculiar effect upon the cellulose structure of the cotton fibre, changing its physical and chemical nature and giving it a glossy appearance, like silk. The discovery was only recently put into practical use, because it shrunk the yarn so badly. But a process has been perfected by which this shrinking is overcome and enduring lustre imparted to the cloth or yarn.

The new process of baling cotton in round bales seems to be growing in favor among producers, shippers, and manufacturers. The new bale is both fire- and water-proof; and as all the air is pressed out in the process of baling, it has no tendency to unroll, and the contents are kept clean. During 1900, 171 cotton mills were constructed in the United States, as against 91 in 1899, 34 in 1898, 49 in 1897, and 66 in 1896. The year seems to have been a prosperous one in all branches of the industry. Less cotton was exported from the United States than in previous years, but this is accounted for by the enormously increased home consumption. The increase of cotton manufacturing capacity in the United States as given by the *Textile World* is as follows:

	1899.	1900.	Per Cent. Increase.
Spindles	14,188,103	21,057,983	48.4
Looms	324,863	490,398	50.9

The following table gives the cotton consumption of the world for the last ten years in bales of 500 pounds:

Years.	Great Britain.	Continent.	United States.	India.	All others.	Total.
1890-91	3,384,000	3,681,000	2,367,000	994,000	150,000	10,456,000
1891-92	3,181,000	3,640,000	2,576,000	914,000	180,000	10,471,000
1892-93	2,866,000	3,692,000	2,551,000	918,000	220,000	10,247,000
1893-94	3,233,000	3,848,000	2,264,000	959,000	250,000	10,554,000
1894-95	3,250,000	4,030,000	2,743,000	1,074,000	300,000	11,397,000
1895-96	3,276,000	4,160,000	2,572,000	1,108,000	419,000	11,582,000
1896-97	3,224,000	4,368,000	2,738,000	1,004,000	548,000	11,880,000
1897-98	3,432,000	4,628,000	2,962,000	1,141,000	726,000	12,889,000
1898-99	3,519,000	4,784,000	3,558,000	1,297,000	845,000	13,998,000
1899-1900	3,334,000	4,576,000	3,856,000	980,000	789,000	13,535,000

The cotton production of the United States and the annual takings of United States spinners from 1889 to 1899, inclusive, are shown in the following table from the Twelfth Census:

CROP OF	TOTAL COMMERCIAL CROP.	TAKEN FOR HOME CONSUMPTION.			PER CENT. CONSUMED IN SOUTHERN MILLS.	
		By northern mills.	By southern mills.	Total.	Of total commercial crop.	Of total American consumption.
In thousands of bales.						
1889.....	6,989	1,790	480	2,270	6.9	21.1
1890.....	7,297	1,790	545	2,335	7.5	23.4
1891.....	8,674	2,027	613	2,640	7.1	23.3
1892.....	9,018	2,172	664	2,836	7.6	24.0
1893.....	6,664	1,662	723	2,375	10.8	30.4
1894.....	7,533	1,580	711	2,291	9.4	31.0
1895.....	9,837	2,019	852	2,871	8.7	29.7
1896.....	7,147	1,605	900	2,505	12.6	35.9
1897.....	8,706	1,793	999	2,792	11.5	35.8
1898.....	11,216	2,311	1,254	3,465	11.2	36.2
1899.....	11,266	2,217	1,415	3,632	12.6	39.0

QUANTITY OF COTTON GROWN IN THE UNITED STATES IN THE YEARS GIVEN, BETWEEN 1790 AND 1900.

Crop of	Production.	Average weight of bale.	Total gross weight.	Increase in gross weight over preceding year given.
	Bales.	Pounds.	Pounds.	Pounds.
1790	8,889	225	2,000,025	.....
1800	177,778	225	40,000,050	38,000,025
1810	330,000	250	80,000,000	39,999,950
1820	681,819	264	180,000,216	100,000,216
1833	1,312,685	339	445,000,215	264,999,799
1839	2,053,193	385	790,479,305	345,479,090
1842	2,469,098	400	987,637,300	197,157,895
1850	5,837,052	445	2,597,238,140	1,409,600,940
1860	3,011,996	440	1,325,278,240	*1,071,959,900
1879	5,755,359	453	2,607,177,627	1,281,899,387
1890	7,472,511	477	3,564,387,747	957,210,120
1899	9,345,391	500	4,672,695,500	1,108,307,753

* Decrease.

**QUANTITY OF COTTON GROWN IN THE UNITED STATES, BY STATES AND TERRITORIES,
ACCORDING TO THE CENSUSES OF 1900, 1890, 1880 AND 1870, WITH PERCENT-
AGE OF THE TOTAL CROP PRODUCED BY EACH STATE
AND TERRITORY IN 1899 AND 1890.**

STATE.	CENSUS OF 1900, FOR CROP GROWN IN 1899.		Census of 1890, for crop grown in 1889.	Census of 1880, for crop grown in 1879.	Census of 1870, for crop grown in 1869.	PER CENT. OF TOTAL.	
	Commercial bales.	Equivalent 500-pound bales.				*In 1899.	* In 1869.
Total...	<i>Bales.</i> 9,645,974	<i>Bales.</i> 9,345,391	<i>Bales.</i> 7,472,511	<i>Bales.</i> 5,755,359	<i>Bales.</i> 3,011,996	100.0	100.0
Alabama.....	1,103,690	1,078,519	915,210	699,654	429,482	11.5	14.2
Arkansas.....	719,453	705,563	691,494	606,266	247,968	7.6	8.2
California.....					84		
Florida.....	56,821	49,359	57,923	54,997	39,739	.5	1.3
Georgia.....	1,296,844	1,331,060	1,191,846	814,441	473,934	13.2	15.8
Illinois.....					465		
Indiana.....					3		
Indian Territory.....	160,324	143,608	34,115	17,000		1.5	
Kansas.....	121	121	212		7		
Kentucky.....	84	79	873	1,367	1,080		
Louisiana.....	708,508	700,352	659,180	508,569	350,832	7.5	11.7
Mississippi.....	1,204,048	1,237,666	1,154,725	993,111	564,938	13.2	18.8
Missouri.....	19,377	20,375	15,856	20,818	1,246	.2	.1
Nevada.....					106		
North Carolina.....	473,155	440,400	396,261	389,598	144,935	4.7	4.8
Oklahoma.....	84,085	71,968	425			.8	
South Carolina.....	876,545	837,105	747,190	522,548	224,500	9.0	7.5
Tennessee.....	215,175	211,641	190,579	320,621	181,842	2.3	6.0
Texas.....	2,658,565	2,609,018	1,471,242	805,284	350,628	27.9	11.6
Utah.....					22		
Virginia.....	9,239	8,622	5,375	19,593	183	.1	
West Virginia.....					2		

* Percentages calculated on the basis of 500-pound bales.

Census Bulletin No. 58 of the Twelfth Census on cotton ginning contains much statistical information relative to the production and ginning of cotton. The crop of 1899 as marketed was found to consist of 9,645,974 bales, amounting to 4,672,695,500 pounds. Of these, 9,043,231 were in the form of square bales with an average weight of 498 pounds and an average cost of \$2.03 for ginning and baling, while 505,464 were round bales, the average cost for ginning and baling of which was \$1.15; and 97,279 bales were sea island cotton, weighing on an average 388 pounds, with an average cost per bale for ginning and baling of \$4.90.

The exports and imports of manufactured cotton in the United States since 1890 are given in the following table, the unit of value being \$100,000:

YEAR ENDING JUNE 30.	EXPORTS—VALUE.					IMPORTS—VALUE.							
	Colored.	Uncolored.	Apparel.	Other.	Total.	Colored.	Uncolored.	Apparel.	Laces, etc.	Thread.	Knit goods.	Other.	Total.
1890.....	29	55	2	14	100	33.7	1.3	3.4	114.5	9	71.5	65.8	299.3
1891.....	26	93	3	15	137	42.4	1.7	12	105.9	8.6	67.4	59.2	397.3
1892.....	25	87	4	16	132	45	1.4	12.6	112.5	6.6	58.3	46.7	238.1
1893.....	28	63	5	22	118	55.4	2.6	16.8	127.4	7.6	63.9	61.8	335.5
1894.....	38	76	5	24	143	33.8	1	16.6	80.2	3.3	43.6	45	223.5
1895.....	35	70	5	28	138	54.3	1.2	27.7	116.9	6.6	65.4	59.9	332
1896.....	34	95	7	32	168	49.2	1.8	26.8	108.8	8.7	61.9	67.1	324.3
1897.....	48	125	9	29	211	44	2.7	26.3	125.7	6.5	56	83	344.2
1898.....	41	92	9	25	167	53.1	1.9	10.5	117.7	6.9	40.3	48.9	272.6
1899.....	52	138	13	30	233	66.5	1.1	10.3	145.5	8.5	43.4	45.3	390.6
1900.....	48	132	16	37	233	81.6	3.6	12.4	192.1	21	47.2	55.3	413.2
<i>Months.</i>													
July.....	4.58	10.28	1.06	2.66	18.58	3.55	.07	.91	14.42	2.32	4.17	6.39	32.05
August.....	4.15	3.12	1.31	2.55	11.13	2.72	.07	1.52	15.70	1.77	4.65	6.17	32.6
September.....	5.42	3.61	1.27	2.42	12.72	2.90	.12	1.57	14.88	1.32	4.98	4.75	39.82
October.....	4.62	3.21	1.32	2.97	12.12	2.80	.17	1.29	19.19	1.46	3.41	4.24	32.56
November.....	4.44	4.62	1.41	2.49	12.96	4.53	.14	.82	14.33	1.46	2.23	3.54	37.04
December.....	3.97	3.62	1.60	2.62	11.81	9.16	.42	1.05	21.46	1.31	3.81	3.47	40.66

EXPORTS AND IMPORTS OF RAW COTTON AND WASTE.

(The unit of quantity is taken as one million pounds and that of value as \$100,000.)

YEAR ENDING JUNE 30.	EXPORTS.							IMPORTS.				
	Sea Island.		Other.		Total.			Raw cotton.			Cotton waste.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Value per lb.	Lbs.	Value.	Value per lb.	Lbs.	Value.
1890.....	9	23	2462	2466	2471	2509	10.15	8.6	13.9	12.16	....	....
1891.....	14	31	2393	2376	2407	2407	10	20.9	28.2	13.49	....	....
1892.....	10	16	2290	2568	2945	2584	8.77	23.7	32.1	11.18	....	....
1893.....	8	17	2304	1870	2212	1887	8.53	43.4	46.9	10.80	1.9	.8
1894.....	14	29	2669	2080	2653	2109	7.62	27.7	30	10.83	2.7	.9
1895.....	15	28	3502	2021	3517	2049	5.82	49.8	47	9.53	2.9	1
1896.....	19	38	2316	1862	2335	1900	8.13	55.8	66	11.93	6	2.1
1897.....	21	41	3082	2268	3103	2309	7.12	51.9	59	11.36	5.3	1.7
1898.....	16	28	3334	2277	3650	2304	5.98	52.7	50	9.48	6.7	1.5
1899.....	14	24	3759	2072	3773	2096	5.55	50.2	50.1	9.98	6	2.1
1900.....	18	30	3082	2288	3100	2418	7.80	67.4	79.6	11.81	7.9	2.4
<i>Months.</i>												
July.....	....	....	77.5	76.5	....	....	9.86	1.88	2.69	14.31	.39	.14
August.....	....	....	54	53.4	54	52.4	9.70	1.22	1.53	12.50	.54	.18
September.....	.1	.2	195.4	201.8	195.5	202	10.33	2.99	3.82	12.77	.66	.16
October.....	1.1	2.6	618.2	602.1	619.3	604.7	9.78	3.17	4.39	13.85	.42	.13
November.....	.95	2.2	433.6	413.7	434.5	415.5	9.57	3.89	5.70	14.65	.85	.26
December.....	1.28	2.5	454.6	439.1	455.9	441.6	9.68	7.69	11.83	15.4	.42	.10

COURT TENNIS. See RACQUETS AND COURT TENNIS.

COX, JACOB DOLSON, a former governor of Ohio, and secretary of the interior under General Grant, died August 4, 1900. He was born in Montreal, Canada, October 27, 1828, and spent the early part of his life in New York. His parents removed to Ohio, and in 1851 he graduated at Oberlin College, Ohio. Having studied law, he settled at Warren, O., and at the outbreak of the Civil War was State senator. Entering the Union army, he was made a brigadier-general, and saw hard service in the Civil War, and commanded the Ninth Corps at South Mountain and Antietam. For his services in this campaign he was commissioned major-general, and later was conspicuous in the Atlanta campaign and in the Franklin and Nashville campaigns. After fighting the battle of Kingston, N. C., he joined General Sherman's force in the famous march to the sea. In 1865 he was elected governor of Ohio, and three years later presided at the national convention which nominated General Grant. During the latter's administration Cox was appointed secretary of the interior, and in 1877 he was sent to Congress. General Cox was for years a prominent lawyer of Cincinnati, where he settled at the close of the war; and in 1873 he was elected president of the Wabash Railroad. A man of most scholarly taste, he was at one time president of the Cincinnati University, and during 1881-97 dean of the Cincinnati Law School. He was also a well-known author on military topics, and wrote *Atlanta* (1882), *The March to the Sea* (1882), and *Military Reminiscences* (1900).

COXWELL, HENRY TRACEY, one of the most active promoters of the science of aeronautics, died at Seaford, England, January 5, 1900. Born at Wouldham, England, in 1819, he became interested in ballooning at an early age, and in 1844 made his first ascent. His ascents, which numbered several hundred, were continued until 1885. On September 5, 1862, Coxwell and James Glaisher, F.R.S., attained the record altitude of seven miles. This and several of his other ascents were attended with great peril. The record ascent was one of a series made under the auspices of the British Association. The *London Times* of September 11, 1862, said: "The aerial voyage just performed by Mr. Coxwell and Mr. Glaisher deserves to rank with the greatest feats of experimentalizers, discoverers, and travellers." Important contributions to the science of meteorology resulted from his endeavors.

CRAIG, THOMAS, Professor of mathematics at Johns Hopkins University, died May 8, 1900. He was born December 20, 1855, at Pittston, Penn., graduated with the degree of Civil Engineer from Lafayette College in 1875, and in 1876 became fellow of Johns Hopkins University, where he received the degree of Doctor of Philosophy in 1878. In 1879 he became assistant in the Tidal Division of the United States Coast and Geodetic Survey, and in 1881 he returned to Johns Hopkins and passed through the successive grades from lecturer to professor. From 1894 to 1899 he was an editor of the *American Journal of Mathematics*, and was a contributor to

many other mathematical journals. In 1879 he published two manuals on the *Elements of the Mathematical Theory of Fluid Motions*; and in 1899 the first volume of a treatise on linear differential equations, a continuation of which was unfinished at the time of his death.

CRANE, STEPHEN, novelist and war correspondent, died at Badenweiler, Baden, June 5, 1900. He was born at Newark, N. J., November 1, 1870, and was educated at Lafayette College and Syracuse University. Having at an early age become interested in newspaper work, he went to New York with the purpose of securing a position on one of the great dailies. Small success, however, came to him, and he was forced to take up with mercantile work. But his literary aspirations were not crushed, and he devoted his leisure hours to story-writing and to the study of life in the slum districts of New York. His investigations resulted, in 1891, in a realistic work, entitled *Maggie, a Girl of the Streets*, which, though both crude and overwrought, appealed to a number of literary men, particularly Mr. W. D. Howells, as being of no small promise. He sprang into popularity in both America and England with the publication in 1895 of *The Red Badge of Courage*, a story of the Civil War, remarkable not only for its realism, but for its imaginative word painting. So vividly is the story told that for a time the impression obtained that it was the work of a veteran of the war. The book was widely read, and was favorably reviewed by English and American critics. When war broke out between Greece and Turkey in 1897 he went to the scene of conflict as correspondent for the *London Westminster Gazette* and the *New York Journal*, and produced a number of vivid letters that added to his reputation. In the interests of the *Journal* he went in the following year to Cuba and Porto Rico and engaged in the work of war correspondence with such enthusiasm that he won for himself new distinction. But in the tropical climate he contracted an illness that resulted in his death. Besides the works already mentioned, Crane's writings include *The Black Riders and Other Lines* (1894), a volume of wilfully eccentric verse; *George's Mother* (1896); *The Little Regiment* (1897); *The Open Boat, and Other Stories*; *The Eternal Patience*; *On Active Service*; *Whilomville Stories*; *Wounds in the Rain*, etc. His books were received better in England than in his own country, a fact that probably influenced him over a year before his death to take up his home near Rye, England. Crane was a man of real literary ability, but his work is better called a promise than an achievement that will live, and even at the time of his death he was practically a man of one book, *The Red Badge of Courage*.

ORAVATH, REV. ERASTUS MILO, for twenty-one years president of Fisk University, died September 4, 1900. He was born at Homer, N. Y., in 1833, and after his graduation from Oberlin College studied in its theological department. His interest in educational matters was only interrupted when he went to the front during the Civil War as the chaplain of the One Hundred and First Ohio Volunteers. He was one of the founders of Fisk University, and devoted his life to the cause of negro education.

CREMATION OF THE DEAD. At Fresh Pond, New York City, 602 bodies were cremated during 1900, being a gain of 74 over the preceding year, and making a total of 3903 for the 26 years of the crematory's existence. At Forest Hills, Boston, 188 bodies were cremated during 1900, as against 230 in 1899. The falling off was due to the new crematory put in operation during the year at Mt. Auburn Cemetery, Cambridge, where 50 bodies were incinerated. At Davenport, Ia., 19 males and 4 females were incinerated, the average age of the males being 62 years, and of the females 50 years. At Philadelphia 119 were cremated, including a larger number of children than ever before. A new crematory at Cleveland, O., was to be opened early in 1901. The price for a cremation will be \$25. It is proposed to hold a congress of cremationists at the Pan-American Exposition in Buffalo in 1901, the object being to promote the cause. The rapid growth in popular favor of this method of disposing of the dead has attracted the attention of life insurance officials to the medico-legal phase of the subject on the ground that the incineration of a body, by obliterating all evidence of crime, especially that of poisoning, may act as an incentive to murder. In the *Sanitarian* for January, 1901, Frederick L. Hoffman, an insurance statistician, points out this danger, and urges that especial precautions in regard to ascertaining the cause of death should be made before issuing a permit for cremation. He states that in Buffalo it is the practice of the health department to demand in all cases where cremation is to take place a special statement, signed by the attending physician, that "— — —, M.D., being duly sworn, deposes that he has examined carefully and separately all the circumstances connected with the illness and death of — — —, and that to the best of his knowledge and belief there exists no reason why the said party should not be cremated." This statement must be sworn to before a notary public; and it would seem that if this method were generally adopted,

it would sufficiently protect the interests of life insurance companies. Of 528 persons cremated at St. Louis, Mo., the only city publishing the causes of death of those whose bodies are incinerated, 64 persons, or over 12 per cent., died from accidents or violence. This is partly explained by the preponderance of adult males; but after making such an allowance the fact remains that deaths from other causes than disease bear an undue proportion to the sum total of the bodies cremated. The necessity of proper investigation before death is increased by the fact that on account of the small number of crematories in the country bodies are often sent from a long distance. The Cremation Society of England removes the possibility that incineration should be employed to destroy evidences of crime by investigating the conditions of death of every body for whose incineration application is made, and it also employs a pathologist to make autopsies when required.

CRETE, one of the largest islands of the Mediterranean Sea, lies to the south-east of Greece. It is an autonomous state under the suzerainty of Turkey. The capital is Canea.

Area, Population, and Industries.—Crete is about 150 miles long and from 6 to 35 miles in breadth, having a total area of 3328 square miles. On June 17, 1900, a census of the island was taken, according to which the population was 301,577. Of these, 268,155 were Christians and 33,422 Mussulmans. The population of the three principal towns was: Candia, 22,026; Canea, 21,475; Retimo, 8354; and the Mussulman inhabitants numbered in the three respectively 11,519, 9249, and 5409—total, 26,177. It is thus seen that the rural population is almost entirely Christian. The census returns of 1881 placed the Mussulman population of the island at 72,353, and by 1896 it had probably increased to 80,000. Accordingly, assuming that 2000 Mussulmans died during the insurrections of 1896 and 1897, we may estimate the number of Mussulman emigrants at upward of 44,000.

The soil of Crete is fertile, but agriculture is neglected. The principal product, which forms about half the value of the exports, is olive oil; other products are wheat, oranges, lemons, wine, raisins, carobs, wool, honey, valonia, and cheese. Silk and soap are manufactured, the latter being the second export in importance. The average annual value of the exports is about \$2,000,000.

Government, etc.—Crete formed a part of the early and the later Roman empire, and in 1669, after a war lasting twenty-four years, was captured by the Turks. But they never effected a thorough and lasting subjugation of the island, and revolts were almost continuous. During the nineteenth century there were six notable insurrections—in 1821, 1860, 1868, 1877, 1889, and 1896. In 1897 Greece attempted to annex the island, but was unsuccessful through the utter failure of her war with Turkey. There succeeded in Crete a condition of political disturbance and anarchy, culminating in the massacre of a large number of Christians by Mussulmans at Canea in September, 1898. The British admiral at Canea bombarded the city, and a collective note, signed by representatives of Great Britain, Russia, France, and Italy, resulted in the withdrawal of the Turkish troops and the acquiescence of the Porte in the appointment by the Powers of a high commissioner, or governor, of the island. Prince George, second son of the King of the Hellenes, was chosen, and he assumed office on December 21, 1898. In the following April a constitution was adopted by the Cretan legislature. According to this instrument, the executive authority is vested in the high commissioner, who is assisted by a council of five members (four Christian and one Mohammedan), who have in charge the several administrative departments. In addition, Prince George has a financial advisor in the person of M. de Blonay. The legislative power devolves upon an assembly of 188 members (of whom 50 are Mohammedans), elected for terms of three years. For local administration the island is divided into five departments, each of which is in charge of a prefect. A system of law has been organized, and equal protection is guaranteed for all religious beliefs. The official language, as well as that of most of the inhabitants, is Greek.

At the end of 1899 it appeared that Prince George's administration had been well conducted and that he had done much toward bringing about a stability of political and legal conditions up to that time unknown in Crete. Nothing seems to have occurred to mar this development in 1900. At the close of the year, however, the Cretans seemed restless under the suzerain authority of the Porte; this authority, it appears, is far more actual and irritating than the Cretan assembly had expected it to be. And already movements have been made looking toward complete independence and toward the annexation of the island to Greece. In the latter part of 1900 Prince George visited several of the European courts for the purpose of securing intervention on the part of the Powers for Cretan independence. The high commissioner, however, met with no encouragement, as the Powers appear to be determined to maintain the *status quo* in the island. In December, 1900, a report that seemed to indicate trouble ahead appeared in the London *Times* to the effect that the Otto-

man government had been informed by its agents in Crete that upon the expiration of Prince George's governorship in May, 1901, the Cretan assembly would proclaim the union of the island with Greece.

Prince George was born in 1869. Early in the autumn of 1900 was announced his betrothal to Princess Victoria, the second daughter of Albert Edward, the Prince of Wales.

For account of archæological investigations in Crete, see *ARCHÆOLOGY* (paragraph Crete).

CRICKET. The usual American-British international cricket match was not played in 1900, but the year was not without a series of games between players of the United States and England. The tour of England by the Haverford College eleven is well worthy of being recorded, for it showed that the national English game has some skilful players on this side of the ocean, and that the growth of the game here has been especially vigorous in recent years. The Americans gained prestige in their first two games by defeating Malvern school, 370-187, and Cheltenham, 176-124. Later they defeated the Rugby school eleven by 124 runs. Drawn games were played with Marlborough, Charterhouse, Eton, Oxford, and Cambridge, in which the advantage was to a greater or less extent with the home teams, and with Haileybury and Shrewsbury, in which, had there been more time, the Americans would probably have won. The visitors were defeated in the games with Clifton, 201-198; Winchester, 124-156 (for 6 wickets); Harrow, 129-256 (for 8 wickets), and the Marylebone Cricket Club. The Marylebone Cricket Club, with its 5000 members, includes all the expert cricket players of the country. In arranging matches an eleven of about equal strength to that of the opposing team is selected. It was, therefore, a distinct compliment to the American team to have had among their opponents several of the strongest players of the club. The Haverford men were strong in batting, in which they in general surpassed the English team. In bowling they were less strong. The twenty-eighth annual match between the United States and Canada was played at Philadelphia, September 21-22, on the grounds of the Germantown Cricket Club, the Americans winning by 15 runs; score, United States, 119 and 124; Canada, 108 and 120. This country has now won 18 of these matches and drawn 2. A team from the Philadelphia Cricket Club played four matches in Canada August 27-September 1, winning 2 and drawing 1. In 1900 a new cricket association was formed by eight of the minor clubs about Philadelphia. Among the other matches of the year the Germantown Cricket Club won the Halifax Cup for the sixth successive year; the Belmont team tied with Morristown for the Philadelphia Cup; All-Philadelphia defeated All-New York; the Knickerbocker Athletic Club won the Metropolitan District League championship; the Paterson team won the New York Cricket Association championship; and the Metropolitan League won its annual match with the New York Association. At the fifth annual tournament of the Northwestern Cricket Association, the Chicago, Manitoba, and Minnesota teams tied for first place. Cricket continued to develop during 1900 on the Pacific coast.

CRIME. All authorities agree that it is useless to attempt to compare the statistics of crime in the United States with a view to determining its increase or decrease. There are 45 different systems of legislation defining crimes and misdemeanors, and a like number of methods of judicial procedure, as well as that of the federal government of the United States. The statistics of crimes for a few States are collected in such a way that some comparisons can be made between different years. There are inherent difficulties in the use of the statistical method to determine increase or decrease of crime in the community. These were pointed out recently by an able writer, and reference made to them in the *INTERNATIONAL YEAR-BOOK* for 1899. Something could be done to overcome the difficulties and to throw much light upon the movement of crime if Congress would authorize the annual tabulation of criminal statistics for the several States on a uniform basis. Such action has been strongly recommended by Mr. S. J. Barrows, United States commissioner on the International Prison Commission, and also in the report of the standing committee on prisons and reformatories of the National Conference of Charities and Correction. A correct classification of crimes in the different States is almost impossible, and statistics of arrests or convictions in different years are more apt to show changes in legislation or in the attitude of the police and judicial departments of government toward certain crimes than actual changes in the commitment of specified offences.

Reports of the International Prison Commission.—A series of very valuable reports, prepared by Mr. Barrows, prison commissioner for the United States to the Sixth International Prison Congress, held at Brussels in 1900, is of particular interest to the students of crime. In one large volume is reviewed the recent and existing criminal legislation of the federal government and of the States. Separate volumes treat of the prison systems of the United States and of the reformatory

system in the United States. The reports also contain valuable material on the indeterminate sentence and parole, and papers on various penological subjects by experts. The reports are published as United States government documents. The volume on prison systems treats the several systems in force in the United States historically, pointing out the modifications that have been made from time to time in the light of experience; it contains also numerous illustrations showing the construction of prison buildings. The volume on reformatory systems comprises a series of valuable papers also of historical interest, and many of them well illustrated, so that one who has never visited a prison or a reformatory can obtain a concrete picture of the ways in which modern penological practice and theories are executed.

Convict Labor.—The United States Industrial Commission presented a report on prison labor, which constitutes Vol. III. of the commission's reports. It investigated the prison population of all the States and Territories. The systems under which prisoners are employed and the conditions of such employment prevailing in each State are presented with recommendations for such changes as are considered necessary to improve the conditions and lessen the competition with free labor. The most notable feature of the commission's report is its recommendation to Congress and to the several State Legislatures of a law interdicting the use of machines, except those operated by hand or foot-power, in the manufacture of any goods, wares, or articles, and prohibiting the employment of prisoners in any way which will come in competition with free labor. The Industrial Commission also reported in favor of a federal law interdicting interstate commerce in all goods, minerals, or materials in whole or in part the product of convict labor. Two of the commissioners dissented from that part of the report which recommended the interdiction of prison-made goods, and a prominent writer, in commenting upon the progress in penology, asserts that these recommendations of the Industrial Commission must be regarded as a step backward rather than forward. The Industrial Commission, however, claims that the competition of free labor exists and has been and can be made severe by the use of methods now in vogue. It calls attention to the various schemes which have been tried by the States working independently to lessen the competition of convict labor with free labor. Thus, the prohibition of the employment of convicts, the prohibition of the sale of convict-made goods, the marking of convict-made goods, the substitution of industries not carried on in the State, the prohibition of the sale of convict-made goods outside of the State where manufactured, regulation of the price at which convict-made goods may be sold in the market, reduction of hours of labor in prison, the exportation of convict-made goods, the diversification of industries carried on in prisons, the payment of wages to convicts, the prohibition of any contracts for convict labor at lower rates per day than the average paid for outside labor of the same kind, the employment of convicts upon public improvements that are desirable but of such a character that they would not have been undertaken by the use of free labor, are among the efforts discussed as having been tried in several States. Attention is also called to the need of uniform legislation and the general method of restriction adopted in New York State is proposed by the commission as the best basis of a reform law. The commission accordingly submitted the general provisions of the existing New York statute as in harmony with its conclusions, and recommended that they should be embodied in the laws of all the States. The conclusions of the commission, covering all of its recommendations, are as follows:

"First. That provision should be made in the laws of each State for the employment of all prisoners in productive labor.

"Second. The States should have absolute control of the care, punishment, reformation, and employment of the prisoners, as well as the disposition of the products of their industry.

"Third. The employment of prisoners in productive labor does, of necessity, result in competition of some character with free labor and industry.

"Fourth. The employment of prisoners with the intention of producing revenue, either for the State exclusively, or for private individuals or corporations and the State jointly, tends to the greatest competition with free labor.

"Fifth. That a system of employing prisoners for the purpose of producing revenue has a tendency to detract from the punitive, reformatory, and disciplinary features of the prisons.

"Sixth. The employment of prisoners in the production of supplies for the maintenance of the State, county, and municipal institutions and the support of the inmates of the same, or in work on the public buildings or roads, tends to the least direct competition with free labor.

"Seventh. Of the various systems for employing convicts, those under which private individuals or corporations are interested have resulted in procuring the greatest revenue to the State.

"Eighth. No system of employing convicts, however wise in conception and

however carefully guarded, can be entirely free from the danger of abuses in management.

"Ninth. The most desirable system for employing convicts is one which provides, primarily, for the punishment and reformation of the prisoner and the least competition with free labor, and, secondarily, for the revenue of the State.

"Tenth. In order to harmonize the antagonistic interests of the different States it is essential that the industrial operators of all the penal, reformatory, and eleemosynary institutions in each should be under the supervision of a central office.

"Eleventh. The adoption of laws embracing the above principles has been retarded by the prevailing industrial, economic, social, and climatic conditions in many of the States. These conditions are so diversified, and the industrial, moral, and educational possibilities of the prison population differ so widely in the several States that the commission is of the opinion that it is impracticable for all of them to adopt a uniform law for the employment of prisoners that would be identical in all of its provisions. The necessity for uniform legislation is, however, fully realized; it is the only permanent remedy for the abuses that exist under the system now prevailing, and for the abatement of competition with free labor."

The National Prison Congress.—The National Prison Association held its twenty-ninth annual congress in Cleveland, September 22-26. The address of the president, Warden Wright, of the Western Penitentiary of Pennsylvania, summarized the progress of prison reform since the formation of the association. Especially significant seemed to be the progress in educational methods and the improvement in prison schools. The idea is growing that the period of confinement in prison is not merely a time for punishment, but a period that must be used to make of the prisoner a better educated man and one able to do honest and useful work when he gets out. The system of classification in prisons has been much improved. The larger use of the indeterminate sentence is meeting with support everywhere, and the value of the Bertillon system of measurements is justifying its extension.

Mr. Eugene Smith, of New York, presented at the prison congress a paper on the cost of crime, based on statistics from the leading cities of the country. The per capita cost in New York City amounted to about \$6 for the entire population, in San Francisco \$5, and in other cities from \$3 to \$3.50. In rural districts it was stated that a conservative estimate would place the per capita cost at \$1. The total cost of crime in the United States was estimated at \$150,000,000 for cities and counties, and \$50,000,000 for States in the Union. Of course these figures are but rough estimates and cover only the cost of apprehending and preventing crime; the cost of stolen property and of suffering caused by crime is not included. Some estimates were offered showing the probable total expense chargeable to crime, amounting to \$600,000,000 per year—an amount exceeding the value of the cotton and wheat crop of the United States. The establishment of crime laboratories in connection with leading institutions, where the physical, social, and psychical characteristics of criminals could be studied by experts, was recommended by a committee of the congress and the same committee continued for another year with power to gather information and to bring the matter to the attention of the attorney-general of the United States in the hope that the national government would establish such a laboratory at the federal penitentiary. The congress passed a resolution endorsing the indeterminate sentence in principle, and another expressing regret at the retirement of Mr. Z. R. Brockaway of the Elmira Reformatory, and endorsing his great services to prison reform.

Progress in Penology.—The chief event of the year just passed has been the abolishment of deportation as part of the penal system of Russia. A small penal colony for political and habitual offenders is still retained, but Russia is making a provision in prisons for 14,000 more persons. With this new policy successfully inaugurated, transportation will practically be abolished by all civilized countries except France, which still supports penal colonies, but only as a secondary feature of its prison system.

Louisiana has recently adopted a plan for the State care of convicts and the abolishment of the lease system, and the same question is arousing considerable discussion in other Southern States, notably in South Carolina. Another item of interest during the year has been the arrangement, entered into between the superintendent of the prisons of New York State and the representatives of nearly all the penal institutions in the country, to have the Bureau of Identification of New York State at Albany used as a central bureau for all these institutions. In the future the descriptive cards containing the Bertillon measurements, as filled out in the various institutions throughout the country, will be filed at Albany, thus creating what will practically be a national Bertillon system for the identification of criminals.

United States Commissioner Mr. Samuel J. Barrows, in a recent article on the progress of penology in the nineteenth century, has summed up his review of the century in a very interesting manner. He says:

"If asked to sum up in a paragraph the most important indications of progress in penology, the representatives of different schools would undoubtedly differ; but speaking as a student of tendencies, principles, and results, and not as the exponent of a school, I should say that the progress in the century just closed is evident in the following points: (1) The higher standard of prison construction and administration; (2) the improved *personnel* in prison management; (3) the recognition of labor as a disciplinary and reformatory agent; (4) the substitution of productive for unproductive labor; and, to a small degree, required for unrequited labor; (5) an improvement in prison dietaries; (6) new and better principles of classification; (7) the substitution of a reformatory for a retributory system; (8) probation, or conditional release for first offenders, with friendly surveillance; (9) the parole system of conditional liberation, found in its best form in the indeterminate sentence as an adjunct of a reformatory system and as a means for the protection of society; (10) the Bertillon system for the identification of prisoners; (11) the new attention given to the study of the criminal, his environment and history; (12) the separation of accidental from habitual criminals; (13) the abandonment of transportation; (14) the humane treatment of the criminal insane, the improvement in criminal procedure, with more effective organization in relief and protective work and in the study of penological problems; and (15) the new emphasis laid upon preventive, instead of punitive or merely corrective measures."

New Legislation Concerning Crimes, Misdemeanors, and Penalties.—In a special report for the International Prison Commission, making a volume of nearly 500 printed pages, the United States commissioner, Mr. Barrows, has presented a comparison of the penal features of the laws of the United States, enacted by the 55th Congress and of the laws of the 47 States and Territories which held legislative sessions in the years 1897 and 1898. His report was prepared for the section on penal law of the International Prison Congress, with the object of showing the spirit and tendencies as well as the legal and ethical distinctions rather than the form and structure of statutory criminal law in this country. In many cases a comparison is made of recent penalties with those of earlier laws in the respective States. This volume is, therefore, an indispensable source of reference, not only to students of criminal law, but also to practical legislators who are obliged to frame laws and impose penalties. The increase or decrease in penalties inflicted for old crimes and the long list of new crimes growing out of modern methods of transportation, the use of electricity, and other changes in the life and habits of the people, are readily seen from this interesting survey of criminal legislation.

CROATIA and SLAVONIA, a province of Hungary, situated southwest of Bosnia, with an area of 16,773 square miles and a population estimated in 1898 at 2,325,281. The capital is Agram, with a population of over 37,000. The principal occupation is agriculture, and in 1898, 1,231,577 hectares were under cultivation. The principal crops in 1898 in metric centners (220.46 pounds) were as follows: Wheat, 3,104,713; rye, 1,548,810; barley, 770,687; oats, 1,019,211; maize, 5,289,051; and potatoes, 3,524,125. There were also 39,746 hectares devoted to the cultivation of grapes, and the output of wine for the year 1898 amounted to 185,000 hectolitres, against 125,000 hectolitres in the preceding year. The silk industry gave occupation to 16,000 persons, and the product of silk cocoons for the year amounted to 222,396 kilogrammes, valued at 330,516 kronen. The mineral products of the year amounted to 54,000 metric centners of pig iron, 1,271,280 metric centners of brown coal, and 224,509 metric centners of salt. The output of spirits during 1898 amounted to 1,370,184 hectolitres. The number of steamers and sailing vessels entered and cleared at the ten ports of Croatia during 1898 was 501, with a total tonnage of 62,777. The total railway mileage of the province in 1899 was 1021, of which 525 miles were controlled by the state. There were in 1898, 366 post-offices, 289 telegraph offices, and 632 telephone stations. The educational institutions of the province in 1898 comprised 1 university at Agram, with 506 students, 9 gymnasias, 10 real-gymnasias, 67 commercial schools, 1388 public schools, and 21 day nurseries. The total number of children attending school was over 215,000, or 62 per cent., of the school population. There were, besides, 8 musical schools, with an attendance of 538. The ordinary expenditures of the province as given in the budget for 1900 were 17,753,495 kronen, and the extraordinary, 822,670 kronen. The principal items of expenditure were internal administration, 9,417,480 kronen; religion and instruction, 3,994,251 kronen; and justice, 4,937,749 kronen. The revenue for 1900 is given as 18,576,165 kronen, of which nearly 17,000,000 kronen are granted by the Hungarian government. Although Croatia-Slavonia is an integral part of Hungary, its government to a certain extent is autonomous. The province sends 40 members to the Hungarian House of Representatives and 3 members to the House of Magnates. There is also a special minister for Croatia-Slavonia in the Hungarian cabinet. The provincial Diet consists of 90 members, elected on a property qualification for 5 years,

and a certain number of ecclesiastical dignitaries and magnates. Professional men have the right to vote without any property qualification.

CROKER, RICHARD, the main events of whose life are identified with the latter-day history of Tammany Hall (*q.v.*), was born at Black Rock, Ireland, March 24, 1843. His ancestors were of English descent, and among them was an inspector-general in the British army, a member of Parliament, and a governor of Bermuda. When Richard was three years old his family removed to the United States, and settled squatter-wise near the present location of Central Park. The boy first attended the public schools, and later was a machinist in the yards of the New York Central Railroad. His political career began when he was elected alderman in 1868. At that time he belonged to the Young Democracy, a faction in Tammany opposed to Tweed; and, therefore, Tweed, operating from Albany, legislated Croker out of office in 1870. While the facts are not obtainable, it is probable that Croker furnished a part of the organization opposition to Tweed which was influential in bringing about the latter's downfall in 1871. John Kelly succeeded Tweed as dictator of Tammany, and he appointed Croker as his deputy. Croker was elected coroner in 1872 and in 1875, appointed fire commissioner in 1883, and city chamberlain in 1889. His opponents admit that while he held these offices "no money stuck to his fingers." Kelly died in 1886, and Croker as chairman of the finance committee of Tammany inherited his power. In the campaign of 1886 the labor unions, then compact and powerful, opposed Tammany and nominated Henry George for the mayoralty. Tammany with great tact retorted by nominating Abram S. Hewitt, who won as the representative of property owners and conservative interests. But Mr. Hewitt was too independent to please Tammany, and Hugh J. Grant was nominated and elected in 1888. Notwithstanding the corruption in government disclosed by the Fassett State Senate committee, Mr. Grant was again elected in 1890. By 1894 Tammany was so completely in power, and charges of bribery and loot were so persistent, that the State Senate sent down another committee—the Lexow—to investigate. The exposures made were of the usual kind and of rather more than the usual number and variety. As a result, William L. Strong, the Republican reform candidate, swept the city. But, as had happened time and again before, the opponents of Tammany fell to quarrelling among themselves. The Citizens' Union nominated Seth Low in 1897. The Republican machine, on the ground that it had not been consulted, and that the union was attempting to win by Republican votes without giving credit and without making return, refused to endorse the nomination, although it was admitted that a more suitable candidate could nowhere be found. Mr. Croker, in the meanwhile, forced Tammany to accept for its candidate, at his dictation, Robert A. Van Wyck—a man in whom Tammany as an organization was little interested. In a three-cornered fight, as the opposition parties very well knew, victory for Tammany was assured, and the Democratic nominee became the first mayor of Greater New York. From that time Mr. Croker's power grew apace. In 1898 he compelled the Democratic State Convention to nominate Augustus A. Van Wyck, brother of Robert Van Wyck, for governor; in the same year he refused to renominate Judge Joseph F. Daly, apparently for no other reason than that the judge would not deal out patronage to the machine. In 1900 Mr. Croker's power assumed national proportions. At the Democratic convention (see **PRESIDENTIAL CAMPAIGN**) which met in July in Kansas City the balance of power between the pro- and anti-silver men was held by the New York State delegation. If ex-Governor David B. Hill had been placed on the committee on platform, there seems no reason to doubt that silver would have been rejected, and that, consequently, Mr. Bryan would have refused the nomination for the Presidency. But by placing Augustus Van Wyck upon the committee Mr. Croker at once humiliated Mr. Hill and changed the results of the convention. Later Mr. Croker endeavored to persuade Mr. Hill to accept the nomination to the vice-presidency. As Mr. Croker was Mr. Hill's declared enemy, this action was most easily interpreted on the ground that Mr. Croker had little idea that the national ticket would win, and only supported it in order to trade Democratic national votes in New York for Republican State votes. The fact that in the election Mr. Odell ran more than 30,000 votes behind his ticket lent color to this theory. At the Democratic State Convention Mr. Croker gave another exhibition of power by defeating Mr. Hill's candidate for governor, Bird S. Coler, and securing the nomination of John B. Stanchfield. During the year 1900 extensive attention was given by the press to the actions of Tammany, its officials, and to the attitude of Mr. Croker. The taxpayers were alarmed by the revelation of a plan whereby the city would have to pay an enormous sum to a private water company (see **NEW YORK—Ramapo Water Company**); and a little later it transpired that an ice company had been formed in which Mr. Croker, the mayor, and other officials were stockholders, whose object was to corner the local market (see **NEW YORK—Ice Trust**). The State Senate having sent another investigation committee (April, 1899), Croker and other Tammany officials were put upon the stand. At that time what was already

known as a matter of general information was put into the form of evidence — namely, that Mr. Croker controlled city nominations and much of city official action; that nominations, while not salable, were assessable, including judicial nominations; that a close relation existed between the politics of contractors, builders, surety dealers and the like, and their success in business; that, in fine, Tammany was a compact, carefully constructed, mercilessly effective, and rigorously maintained commercial organization, with a responsible head and ministry, and a purpose whose success was guaranty for its continuance. At the same time it was plainly intimidated by Tammany officials during the investigation that so far as mercantile preferences were concerned, Senator Platt, on behalf of the Republican machine, had received privileges and advantages; and it was roundly demanded that the senator be called to the stand. But the Republican Mazet Commission refused to do this. In the fall of 1900 a vice crusade against Tammany was started by a letter published by Bishop Henry C. Potter (*q.v.*). Mr. Croker responded by appointing a committee of five, whom he ordered to co-operate with the police in every possible way. This committee was not able to collect much evidence.

CRONJE, General PIET, the Boer commander now detained by the English at St. Helena, won world-wide repute by his gallant defence at Paardeburg in February, 1900. With an army of 4000, encumbered with women and children, he held out against Lord Roberts and his 40,000 soldiers for twelve days. This statesman and soldier, who has been a prominent figure in the history of the South African republic, was the landed proprietor of 12,000 acres near Pretoria and a member of the Transvaal executive council. He is about 65 years old, and belongs to one of those old Boer families which trace their descent to the French exiles who settled in Holland after the revocation of the Edict of Nantes. The desultory warfare which was waged against the natives gave him his first lessons in fighting. At the time of the British annexation in 1877 he was one of the few Boers who with General Joubert refused to recognize the new *régime*. He took a prominent part in the ensuing campaign, which terminated at Majuba. When the present Boer War broke out Cronje was in command on the western frontier. He began activities by seizing an armored train, and then destroyed the railway and telegraph communications between the Cape and Rhodesia, and in his attempt to take Mafeking by storm exhibited great military ability. His first great success was the attack upon Lord Methuen and his Highland Brigade when they were marching to the relief of Kimberley. At Modder River Cronje met and defeated them and again prevented their persistent advance by a second repulse at Magersfontein. After the siege of Kimberley had been relieved by General French, Cronje attempted to lead his forces to safety in the Orange Free State, and showed great courage and skill in covering the retreat of his army by active skirmishing with the advancing British under Lord Roberts. The latter finally forced the Boers to take position in the dried river-bed of the Klip, near Paardeburg, in the Orange Free State, a position with no natural advantages. In the bomb-proof shelters which they dug for their protection the Boers stubbornly held out under the artillery fire until lack of ammunition and food forced them to surrender February 27, 1900. Cronje's subsequent detention at St. Helena has been a serious loss to the Boers. He is recognized by his enemies as a straightforward and chivalrous fighter, and but one incident in his career is brought against him — the continuance of the siege of Potchefstroom in the earlier war with the English after an armistice had been concluded. On the battle-field he shows unwearied activity and handles the Boer forces with great ability, winning their respect through fear. In private life he is unpretentious and genial. See TRANSVAAL.

CROPSEY, JASPER FRANCIS, an American landscape painter, belonging to what is known as the Hudson River school, died at Hastings-on-Hudson, N. Y., June 22, 1900. Born on Staten Island in 1823, he studied architecture in youth, but later became a pupil of Edward Maury in painting, and continued his study in Italy. He lived in London for seven years, regularly sending his pictures to the Royal Academy. From 1863 to 1885 he had a studio in New York, and after that lived at Hastings. Among his works are "Backwoods of America" (1857); "Ramapo Valley" (1881); "Autumn on the Hudson" (1882); "Warwick Castle," and "Anne Hathaway's Cottage." He was essentially of the earlier school of painters; he aimed simply at reproduction, and his works were untouched by the sentiment which characterizes so much of the work of the modern school. Latterly he also painted in water-colors, and was one of the founders of the American Water-Color Society. He was elected to the National Academy of Design in 1851, and was a member of the Philadelphia Academy of Fine Arts and the London Society of Landscape Artists.

CROQUET (ROQUE). Croquet, displaced by lawn tennis, is, in the popular mind, practically a non-existent sport to-day. The old lawn game known to the previous generation is, indeed, but little played; but under the fostering care of the

National Croquet Association, which has for nineteen years held its annual tournaments, the game not only has been kept alive, but has been developed into a highly scientific contest, played on expensive, specially prepared courts. It has become practically a new game, in recognition of which the name of the national governing body was changed in 1899 to the National Roque Association. The annual championships were held, as usual, at Norwich, Conn., August 21-25, and C. G. Williams, of Washington, D. C., won for the second successive year, with 11 out of 14 games. W. H. Wahley and S. L. Duryea, of Washington; G. C. Strong, New London, Conn.; and B. R. Veasey, Wilmington, Del., tied for second place with 10 games each, Wahley winning on the play-off. In the second class of players C. A. Littlefield, of Chelsea, Mass., won; and in the third class A. L. Williams, of Washington.

CRUMP, FREDERICK OCTAVIUS, editor of the *London Law Times*, died April 15, 1900. He was born November 1, 1840, and was educated at Elizabeth College, Guernsey, and Queen's College, Cambridge, being called to the bar in 1867. He attained much success both as counsel and journalist, and in 1885 became a queen's counsel. He wrote *A Code of the Law of Marine Insurance*.

CUBA, the largest island of the West Indies, is, from Cape Maysi on the east to Cape San Antonio on the west, 730 miles in length. Its breadth ranges from 100 miles in the east, in the province of Santiago, to 25 miles in the neighborhood of Havana. The area is only approximately known, since its limits have never been mapped with any approach to accuracy. Measurements made from different maps give variations in area of over 2500 square miles. Thus, measurements made from a chart held by the United States Coast and Geodetic Survey gives for Cuba and the Isle of Pines an area of 46,575 square miles; the chart published by the Hydrographic Office gives 45,883 square miles, and the map of the Information Division of the War Department gives 44,000 square miles. Assuming the last named to be correct, the areas of the provinces of Cuba, their total population, and the number of inhabitants per square mile is shown as follows:

Province.	Area in Square Miles.	Population. Census 1899.	Inhabitants per Square Mile.
Havana	2,772	424,804	153
Matanzas	3,700	202,444	55
Pinar del Rio.....	5,000	173,064	35
Puerto Principe.....	10,500	88,234	8
Santa Clara.....	9,500	356,536	37
Santiago	12,468	327,715	26

The central provinces of Cuba, Havana, Matanzas, Santa Clara, and Puerto Principe, consist mainly of broad, undulating plains of little altitude, interspersed with shallow stream valleys. In Havana, Matanzas, and Santa Clara these plains are in a high state of cultivation, while in Puerto Principe they are principally utilized for cattle grazing. Throughout the province of Pinar del Rio at the west of the island runs a range of hills closely paralleling the northern coast and exceeding in many places an altitude of 2000 feet. From these hills "the land descends northward and southward to the coast, in long, undulating slopes, the southward slopes forming the celebrated tobacco lands known as *Vuelta Abajo*." The province of Santiago consists in the south and as far east as the city of Santiago of the Sierra Maestra Mountains, having many peaks exceeding 5000 feet. Farther east is a maze of broken hills and small fertile valleys, while in the interior of the province is a high plateau with a summit elevation of 1000 feet or more.

The rivers of Cuba, though numerous, are hardly of any importance for navigation, only one being navigable by light-draught boats for a distance of fifty miles from its mouth. For this reason Cuba is dependent for internal communications upon wagon roads and railroads. Of the latter, there are 1100 miles, mostly, it is stated, in poor condition. The former also are so inadequate as to constitute a serious drawback to the development of agriculture. "Outside of the provinces of Matanzas, Havana, and Pinar del Rio, and except in the vicinity of the large cities, there is not a good road in Cuba; and even those that are passable in the dry season become almost impassable for wagons in the rainy season."

Agriculture.—Cuba is pre-eminently an agricultural and pastoral country. Prior to the Spanish War there were 90,960 plantations, farms, orchards, and cattle ranges, valued at about \$200,000,000. Manufactories were, in the main, limited to cigar factories and to mills for producing raw sugar, molasses, and rum. The agricultural products include sugar, tobacco, fruit in great variety, and coffee. But of these the most important for export and those on which the wealth of Cuba mainly depends, are sugar and tobacco. The returns of the Cuban census, published in 1900, show that at the close of the year 1899, 47.3 per cent. of the cultivated area of Cuba was planted in sugar-cane, 11.3 per cent. with sweet potatoes, 9.3 per cent. with tobacco,

while only 1.6 per cent. was planted with coffee, at one time a product of great importance in Cuba. Of the total area given over to sugar-cane planting, 72 per cent. was in the central provinces of Santa Clara and Matanzas. The tobacco interests were centred in the western province of Pinar del Rio, as is shown by the fact that 72.2 per cent. of the total area devoted to them was in that province. In Santiago were situated about three-fourths of the coffee lands of the island. Puerto Principe had practically no other industry than cattle-raising, though Havana and Santa Clara had each many more cattle ranches. The sugar crop in 1894 amounted to 1,054,214 tons of 2240 pounds each. In 1898 the crop was 305,543 tons; in 1899, 336,668 tons, and in 1900, 283,651 tons. These decreasing figures exhibit the devastation occasioned by the war. The insular secretary for agriculture and industry pointed out that a return to the large product of 1894 was impossible until the establishment of agricultural banks or other means of credit permitted the plantation owners to procure proper implements and repair damages. Under proper conditions, however, and if a foreign market was assured, it seemed evident that Cuba could become one of the great sugar-producing countries of the world. For the crop of 1894 was cultivated on less than one-fourteenth part of the area of the island; and a large portion of this total area might be utilized for sugar-raising. While tobacco is cultivated in but four of the provinces of Cuba—Pinar del Rio, Havana, Santa Clara and Santiago—there seems no reason to doubt but that it could be advantageously raised in the other two. The crop for the year 1899-1900 amounted to 460,000 bales of 110.23 pounds (50 kilos) each, this being the largest crop since 1894-95, when the production was in the neighborhood of 560,000 bales. For the year 1896-97 the crop was 375,000 bales, in 1897-98 it was 88,000 bales, and in 1898-99, 220,000 bales. The value of the tobacco exports to the United States in 1900 was estimated at \$9,704,331, a great increase over the years intervening since 1896, when the export value stood at \$10,613,468. In the first half of the century the cultivation of coffee was one of the most remunerative and extensive industries of Cuba. In 1825 Cuba exported more coffee than Java, and in 1846 there were over 1600 coffee plantations in the island. But in the latter year and in 1843 violent hurricanes seriously damaged the crops. "Owing to these disasters, the increased coffee trade of the East Indies and South America, and the larger and more certain profits of sugar cultivation," most of the coffee plantations were converted to other uses, and the industry rapidly declined. The coffee crop of the world for 1900 was estimated at 15,285,000 bags, of 134¼ pounds each. Of this amount Cuba produced in the neighborhood of 130,000 bags—not enough for home consumption. Coffee is produced in all the provinces of Cuba except Puerto Principe. In 1894 there were 191 plantations, the larger number of which were in Santiago. The high plateaus of this province make it especially adapted to coffee cultivation, since coffee thrives best at an altitude of from 1500 to 2500 feet. Aside from trade conditions, no reason appears why this industry should not be extensively revived. For stock-raising few countries are more admirably adapted than Cuba. Grass is abundant at all seasons of the year and the streams furnish an abundance of water. The industry, however, has been almost destroyed by the revolutions, and especially by the late war. Taxes were levied by the Spanish government amounting to upward of 40 per cent. of the value of the stock, and in addition "the stock was taken by the government under one pretext or another as fast as imported." The census for 1899 showed that oxen were the chief draft animals used, that there were but few cows or sheep, and that hogs alone seemed to have survived the rigors of the war; of these there were 358,868.

Commerce.—The statistics of Cuban commerce for the fiscal year ending June 30, 1900, show that the island is in some measure regaining the prosperity which it enjoyed prior to the war. The total imports of merchandise for the year, as reported by the Division of Insular Affairs of the War Department, were \$71,681,187 and the exports \$45,228,346. In 1892, which may be taken as an ordinarily prosperous year during the Spanish *régime*, the imports were \$64,000,000, and the exports, \$93,000,000. While the imports are slightly larger for 1900 than for 1892, the exports are not half as large, and this is a serious matter, because if the island does not sell it cannot long buy. Capital is urgently needed in Cuba to repair the buildings injured by the war, to buy implements and instal machinery, to restock the plantations, and in general to aid Cuba in increasing her products and exports. How predominant a share the United States holds of the commerce of Cuba will be seen in the following table, which shows for the fiscal year the total trade of Cuba with the principal countries with which it deals:

Imports.		Exports.	
United States.	\$34,347,008	\$36,912,629	
England	11,955,153	4,354,817	
Spain	11,387,658	1,006,546	
Germany	2,629,654	2,297,545	
France	4,130,416	2,929,278	
Canada	\$44,154	\$234,642	
Colombia	2,136,658	113,184	
Uruguay	1,308,647	100,166	
Porto Rico...	1,611,237	81,580	

The imports for the year included only a few hundred thousand dollars' worth of machinery, engines, etc., of all kinds, and this seemed to prove conclusively that American capital has not yet begun to enter Cuba for the development of industries and manufactures. The principal imports are as follows, the total value of each import being followed in parentheses by the largest values exported to Cuba by any single country, and in some cases by the next largest exporting country: Cattle, \$10,326,304 (United States, \$3,073,952; Mexico, \$2,893,915); flour, wheat, \$2,154,702 (United States, \$2,150,530); coffee, \$1,697,796 (Porto Rico, \$894,625); cotton manufactures, \$6,688,841 (England, \$3,060,012; Spain, \$1,907,889); shoes, \$2,283,083 (England, \$1,760,379); paper, \$779,517 (Spain, \$290,911); meat, salted or pickled, \$2,998,519 (United States, \$1,431,216; Uruguay, \$1,275,653); lard and tallow, \$2,542,158 (United States, \$2,516,377); rice, \$3,414,388 (England, \$2,436,314); wines and cordials, \$2,354,187 (Spain, \$2,239,679). If this list were increased to include the smaller imports it would be noticed that luxuries form but a very small part of imports to Cuba, the great bulk consisting of the actual necessities of life. The exports of leaf tobacco were \$9,720,266, and of this amount over \$8,000,000 went to the United States, and nearly \$1,000,000 to Germany. Cigars were exported to a value of \$11,599,985, of which the United States received \$4,503,962; England, \$3,964,063; Germany, \$836,231. Cigarettes were exported to \$305,889, of which over a third went to Spain. Wood and manufactures of wood were exported to a value of \$649,959, of which the United States took \$404,396; rum to \$189,024; cacao to a value of \$281,211, and iron ore to \$637,846, most of which went to the United States. The total exports and stocks of sugar on July 31, 1900, were (in gross tons): Exports, 263,835; stock on hand, 14,219; local consumption (7 months), 21,000; stock on hand January 1, 1900, 8606; received at the ports up to July, 290,448.

Education.—In his annual report for the year 1900 the secretary of war stated that immediately preceding the Spanish War the enrolment of scholars in Cuba was 36,306, of which number probably less than one-half represented actual attendance. At that time, as there were no buildings set aside for school purposes, scholars came to the residences of the teachers; there were few books, blackboards, desks, or other school apparatus. The catechism was the principal text-book, and the girls mainly employed themselves in embroidery. Since the teachers were underpaid or unpaid by the proper authorities, they were allowed to accept fees from their pupils; and as school accommodations were entirely inadequate in any case, this competitive system resulted in a weeding out of the poorer children. In December, 1899, the entire public school enrolment was 21,435, since which time the entire educational system has been reorganized. The following table shows the advance in school facilities during the six months ending June 30, 1900:

	School Rooms.	Enrol- ment.		School Rooms.	Enrol- ment.
January, 1900.....	635	37,995	April, 1900.....	3,126	127,426
February, 1900	1,338	69,476	May, 1900.....	3,313	139,616
March, 1900.....	3,126	127,881	June, 1900.....	3,550	143,120

The schools have been separated from the residences of the teachers, and all over the island the old Spanish barracks have been refitted and turned into school-houses. The most approved methods of instruction have been followed, the books used being translations into Spanish of American text-books. It was estimated that the education appropriations from the insular government for 1900 would amount to about \$4,500,000; but that, with the limited resources of the island, it would be impossible for a long time to come "to fully meet the demands for the learning so long withheld."

The Cuban Public School System.—On June 30, 1900, by order of the military governor of Cuba, and upon the recommendation of the secretary of public instruction, regulations were made public, in brief as follows, for the government of the public schools of Cuba. A chief executive officer, to be known as the commissioner of public schools, is to be appointed by the military governor. He is to see that all duly authorized orders concerning the public schools are enforced, direct the building of school-houses and the purchase and disposition of supplies, and report annually to the secretary of public instruction upon the condition of the schools. The military governor, upon the recommendation of the secretary of public instruction, is also to appoint a board of school superintendents, to consist of one island superintendent and provincial superintendents, one for each province. The board is to hold regular sessions at least twice every year, and is directed to introduce the best teaching methods, select text-books, and arrange uniform courses of study for the different grades of public schools throughout the island. School districts of three classes are established in the island, as follows: (1) Havana, Santiago, Matanzas, Cienfuegos, and Puerto Principe, cities of more than 30,000 inhabitants,



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CUBAN SCHOOLS.—1. A Girls' School at Guira de Melena. 2. Boys' Class, Havana Public School, Number Thirteen. Digitized by Google

are to constitute each a *city district of the first class*. (2) Cárdenas, Manzanillo, Guanabacoa, Santa Clara, Sancta Spiritus, Regla, Trinidad, and Sagua La Grande, cities of between 10,000 and 30,000 inhabitants, are to be each a *city district of the second class*. (3) Each organized municipality, exclusive of any of its territory included in a school district, is to constitute a *municipal district*. In city districts of the first class the Board of Education is to consist of a director and a council of seven members, appointed in the first instance by the governor, and in 1901 and subsequently by the voters of the city. The director is to have executive power over school matters in the district, and the council is to be vested with the legislative power, except that the director may have a limited power of veto over its resolutions. A superintendent of instruction is to be appointed by the council who is to employ and discharge teachers. In city districts of the second class the mayor is directed to appoint a Board of Education of 5 members, to hold office until the regular election in 1901, when a Board of Education of 6 members is to be elected by vote. In municipal districts the Board of Education is to consist of the mayor of the municipality, and of a number of directors depending upon the number of sub-districts in each district. All teachers are required to make reports to the Boards of Education of their districts; Boards of Education must report to the provincial superintendent, who must in turn report to the island superintendent. The Boards of Education are required to provide schools, to be used exclusively for educational purposes, in such number as are necessary for the education of all unmarried persons between the age of 6 and 18. These schools are to continue in session 36 weeks in each year, and evening schools are to be established wherever it appears that there will be an attendance of not less than 25. Principal and teachers are to receive salaries not to exceed \$65 per month in Havana, and \$50 and less in other places. But for similar services men and women are at all times to receive equal pay. Unless absolutely compelled to work for his support, every child between the age of 6 and 14 is required to attend some public or private school for at least 20 weeks every year; and no child between 6 and 14 may be employed by any person or company during the school term unless this condition is complied with. At least one teachers' institute is to be organized in each province, whose sessions are to be not less than four weeks, and every teacher is required to attend yearly a full session of the institute as a prerequisite to drawing salary during the vacation period. Before attending the institute every teacher must deposit \$5 to cover his pro rata share for the cost of its proceedings. The Board of Superintendents, at their annual meeting in October, 1900, are directed to decide upon plans for the organization of the teachers' institutes in the island, and to determine upon examinations to be held for the purpose of adjudging teachers' qualifications to teach, and to report their findings on these matters to the military governor and to the secretary of public instruction so soon as feasible. See EDUCATION in THE UNITED STATES.

Prisons and Charities.—In his annual report for the year 1900 the secretary of war reported that at the time of the American occupation of Cuba "the prisons in the island were filled to overflowing with wretched creatures living in indescribable filth and squalor." For example, in the woman's prison in Havana the women slept on the floor, and owing to their lack of clothes "came before the inspector one by one, passing the same garment from one to another." Many of the inmates of the prisons had never been tried or convicted, and if they were, as a matter of fact, guilty of the offences with which they were charged, still they had been punished, by imprisonment without trial, far more severely than they could have been upon conviction. Upon the recommendation of a Board of Pardons constituted in January, 520 of these prisoners were released from confinement. Such "intolerable delays of criminal procedure" have been largely obviated for the future by the establishment of correctional courts, in which petty offences may be summarily dealt with and the innocent may have an opportunity to be promptly relieved from prosecution. "One of the results of these changes of procedure is that many of the prisons in the island are now wholly without inmates." To safeguard further against abuses in criminal procedure, the writ of habeas corpus, with which the Cubans have been entirely unfamiliar, was directed to go into effect in December, 1900. Other reforms included the renovating and cleaning of the prisons, the introduction of a rigid system of inspection, and the separation, so far as possible, of youths and adults, and those charged and those found guilty of offence. The secretary reported that these changes were made "with the concurrence and mainly through the instrumentality of Cubans," so that the Cubans might maintain the reforms when the government came entirely into their hands. The charitable institutions of the island have been renovated, reorganized, and placed under one general comprehensive law. The issue of rations by the United States has been discontinued, and in place of this government aid is being extended to 38 hospitals, 4 asylums for the aged, 12 orphan asylums, 2 dispensaries for the poor, 1 insane asylum, 3 leper hospitals, 2 reform schools, 1 training school for boys, 1 for girls, and an emergency hospital in Santiago de

Cuba. "The hospitals have been supplied with medicines and surgical apparatus and attendance," and a training school for nurses has been established under trained nurses from the United States. Many parents who were obliged at the time of the war to place their children in institutions have since claimed them, other children have been placed out in private families, and for those remaining a thorough system of industrial education has been inaugurated. At the time of the war the insane "were confined in cells in the jails all over the island, filthy and ragged, and treated literally like wild beasts." Since then they have been all taken to the large, renovated asylum in Havana and "cared for in accordance with the dictates of modern humanity."

Charities System.—A comprehensive and well co-ordinated system for the regulation and betterment of the Cuban department of charities was devised and promulgated by the military governor, upon the recommendation of the secretary of state and government, to go into effect August 1, 1900. In this department of charities were included hospitals, orphan asylums, and institutions for destitute children, juvenile reformatories, homes for the aged, hospitals for the insane, and all other establishments whose principal business was to support and assist those who were unable to care for themselves. The regulations issued provided in brief as follows: A department of charities is created under the general supervision of the Department of State and Government. The central authority of this Department of Charities is to be vested in a board of eleven members, exclusive of the superintendent of charities, who is to be the chief executive officer thereof. Five members of the board are to be appointed at large, and one from each of the six provinces of Cuba. It is declared to be the intention of the government of Cuba to take over from the municipal and provincial authorities the care of destitute and delinquent children. And for that reason local authorities are enjoined from establishing further institutions for such children, and payments to local institutions for that purpose from the insular government are to cease as soon as practicable. Destitute children may be committed by the local justices to the Department of Charities, to remain under the latter's control until they reach the age of 16, and the insular authorities are authorized from each municipality a sum not to exceed thirty cents per day for each child from that municipality supported in a state institution. Convicted, immoral, or immorally situated children are directed to be sent to the reform schools at Havana, and young girls at present in any prison are to be sent to the Aldecoa reform school for girls at Havana. The Department of Charities is instructed to establish a training school for boys, in which destitute boys under 16 years of age may be instructed in the branches taught in the public schools of the island, and also in such other branches of practical information as will enable them to maintain themselves at some useful trade, calling, or occupation. Similarly, what is at present known as the Havana Industrial School for Girls is to be renamed the Training School for Girls, and is to be managed in the same way as the Training School for Boys, and for the same purpose. In both of these schools children are to be placed whenever possible in private families, giving guarantees for good treatment and educating influences. The San José Asylum for Boys is to be known in future as the Reform School for Boys, and is to have jurisdiction of boys under 18, who may be committed to it for training and reformation. Similarly the Department of Charities is authorized, so soon as it may be possible, to establish a Reform School for Girls. Within the Department of Charities is created a bureau which shall take charge of placing children from the training schools, or from the reform schools, if they are on parole for good behavior, into private families and of visiting them there and of seeing to it that they are properly treated. Regulations are made for the admission of insane persons into the asylum at Havana, and for their proper treatment, and it is provided that this institution shall be wholly supported by the state and be under the control of the state. Hospitals and homes for the aged are to be hereafter under the control of the municipal authorities of the several districts and provinces; and appropriations from the insular government for hospitals are to be withdrawn as soon as practicable, and for homes for the aged they are to be withdrawn after December 31, 1900. Over every charitable institution in the island, public or private, or of whatever nature, the Department of Charities is to have general supervision. Every such institution must file a complete report with the department once every year, and is to be visited by agents of the department at least twice a year. The department is also authorized to make provision for the care and training of blind and deaf children, and of others physically or mentally defective. See INSANITY and VITAL STATISTICS.

Census.—The report of the census of Cuba, published in 1900, shows that on October 16, 1899, the population of Cuba, including the Isle of Pines and the neighboring Keys, was 1,572,797. The last prior census, taken under Spanish authority in 1887, and in which the number of inhabitants was perhaps underestimated, showed a population of 1,631,687. Up to the beginning of the late war the population probably

increased to 1,800,000. So that the direct and indirect decrease due to the war was not far from 200,000. The number of people living in 1899 in cities of 1000 inhabitants or more, was 741,273, or 47.1 per cent. of the entire population. Those living in cities of 8000 or more numbered 507,831, or 32.3 per cent. of the total population. The native whites of Cuba constituted 57.8 per cent. of the population. The foreign whites constituted 9 per cent.; the colored, including the negro and mixed elements, amounted to 32 per cent., while the proportion of Chinese was less than 1 per cent. The number of Cubans reported as having gainful occupations was 622,330, or 39.6 of the total population. This was a higher per cent. than was shown in 1890 for the United States (36.3) or for Porto Rico (32.2) in 1899. The difference between the per cents. for Cuba and the United States resulted from the fact that many more boys work in Cuba. The proportion of boys between 10 and 15 working in Cuba was nearly four times as great as those working in the United States; the proportion of young men between 15 and 19 was over 50 per cent. greater, and of those between 20 and 24, 7 per cent. greater. On the other hand, the proportion of white women working in Cuba was only about one-third of those working in the United States, and the proportion of colored women about two-thirds. The proportion of workers engaged in different occupations in Cuba and the United States was as follows: Agriculture, fisheries, and mining, Cuba, 48.1 per cent.; United States, 39.7 per cent.; domestic and personal service, Cuba, 22.8 per cent.; United States, 19.2 per cent.; manufacturing and mechanical pursuits, Cuba, 14.9 per cent.; United States, 22.4; trade and transportation, Cuba, 12.8 per cent.; United States, 14.6; professional service, Cuba, 1.4 per cent.; United States, 4.1 per cent. The difference between these percentages in the two countries indicates the backwardness of Cuba in scientific and highly skilled pursuits, and shows also the predominance of agricultural interests in that country.

The following table shows the total population for Cuba and each of its provinces; also the population as divided into its three most significant elements. The divisions made of occupations follow the broad lines distinguishing mechanical from agricultural peoples, and showing in a way the relative importance of the provinces agricultural, and the extent to which trades have been developed in them:

PROVINCES.	POPULATION.				OCCUPATIONS.				
	Total population.	Native white population.	Foreign white population.	Negro population.	Agriculture, fisheries and mining.	Trade, manufacturing, mechanical and professional.	Domestic and personal service.	Without gainful occupation.	
Havana.....	424,804	243,619	68,971	112,214	31,988	87,269	64,714	240,848	
*City of Havana.....	235,981	115,533	52,901	67,548	715	66,919	40,366	127,981	
Matanzas.....	208,444	102,682	15,226	84,527	50,604	21,387	13,105	117,148	
Pinar del Rio.....	178,064	114,997	10,718	47,489	48,697	8,466	10,669	106,802	
Puerto Principe.....	66,234	66,249	4,088	17,847	17,058	7,067	7,697	56,412	
Santa Clara.....	356,536	214,945	29,823	111,768	81,951	31,825	30,836	211,324	
Santiago.....	337,715	167,797	13,313	146,605	68,699	25,193	14,885	218,938	
Cuba (Total).....	1,572,797	910,389	142,096	530,400	299,197	181,197	141,986	950,467	

* Included in province of Havana.

The number of persons in Cuba classified as having "higher education" aggregated 1.2 per cent. of the population; 36 per cent. were able to read. Of the whites, 50 per cent. were able to read, and of the negroes between 27 and 28 per cent. The number of persons reported married was 15.7 per cent. of the population. This proportion is not more than one-half of the proportion in any great European country with the exception of Ireland and Scotland. In Mexico, by the census of 1895, 31 per cent. of the population were reported married. The small number of persons married in Cuba is to some extent accounted for by the large number living together by mutual consent, as shown in the table below. This latter class has increased within the last forty years, or, in any event, the proportion of legal marriages has decreased. Marriage is more than three times as frequent among the whites than among the colored race. Mainly as a result of the wars it was found that there was in Cuba one widow or widower to every three persons married. In the United States, by the census of 1890, there was one widow or widower to every eight married persons. The following table shows for Cuba and for each province the per cent. of the population able to read, the per cent. of the total adult population, black and white, who are married, the number of persons living together by

mutual consent to each 100 married, and the number of illegitimate children and adults.

PROVINCE.	Popu- lation.	Per cent. able to read.	Aver- age size of fam- ilies.	Per cent. married in total adult popu- lation (15 years and over).		Number of persons living together by mutual consent to each 100 married.		Illegitimate children and adults.	
				White.	Colored.	White.	Colored.	White.	Colored.
Havana.....	494,804	53.1	4.4	31.4*	9.0*	16*	249*	6,672	21,431
Matanzas.....	202,444	34.8	4.5	33.1	3.9	15	788	2,695	21,668
Pinar del Rio....	173,064	18.9	4.5	31.5	10.5	26	206	7,054	10,922
Puerto Principe..	88,284	37.8	4.7	35.4	19.1	15	60	5,000	8,474
Santa Clara.....	356,536	32.8	5.0	32.3	9.8	19	234	8,985	22,591
Santiago.....	327,715	36.8	5.0	29.3	13.4	55	221	28,325	46,004
Cuba.....	1,572,797	36.0	4.8	32.4	9.6	23	257	58,940	126,090

* Approximate.

It was stated in the report on the Cuban census that the effort made to ascertain the vital statistics of Cuba for the ten years preceding had not, owing to defective or destroyed records, been entirely successful. It appeared, however, that the average annual number of births for the four years 1890-93 was 31,970, and for the four years 1895-98 the average number was 17,204. The number of reported births in 1898 was 9059, and in 1899, 10,495. The marriages reported for 1890 were 5516. The three succeeding years showed a slight increase, and the number then rapidly sank to 2038 in 1897, 2118 in 1898, and 1903 in 1899. The death reports were not complete from some provinces, and Havana province, outside of the city, did not report at all. As reported, however, the total number of deaths for the ten years ending 1899 was 500,900. The number for 1890 was 28,673, and there was but little increase until 1896, when the figure rose to 58,034. The number reported for 1897 was 118,737, for 1898, 109,272, and for 1899, 17,807, a decrease of over 90,000. For the four years 1895-98 the number of deaths reported was over 200,000 in excess of those in times of peace.

Postal Frauds.—Early in May evidence was obtained by inspectors of the Post-Office Department showing that a continuous course of embezzlement had been practised in the Cuban post-office for a period of one year or more. The Cuban postal service was put into operation in January, 1899, and a system was instituted under and by the advice of specially detailed experts, which seemed to provide ample safeguards against speculation. The Department of Posts was entrusted only with the executive branch of the service; the auditor was responsible solely for the fiscal division and was not supposed to be in any way connected with the administrative branch; and finally the money deposited and received in the island treasury was paid out only on warrants countersigned by the governor-general. In short, the system was of such a nature that thieving was possible only by extensive official collusion. As soon as the report of the inspectors was made to the postmaster-general a thorough investigation was begun under the direction of Joseph L. Bristow, fourth assistant postmaster-general. The findings were made public on July 25. From these it appeared that in January, 1899, E. G. Rathbone, director of the Department of Posts in Cuba, created a postal bureau of finance charged with the custody and sale of postal supplies, and appointed as chief of this bureau C. F. W. Neely. Largely by the manipulation of surcharged stamps, and by recording as destroyed, surcharged stamps, which, as a matter of fact he sold, Neely embezzled money to an amount somewhere between \$130,000 and \$150,000. But out of this amount he was forced to pay commissions in varying amount for the complaisance of various minor officials. The part which Director Rathbone played in these transactions was not accurately ascertained, but it was found that Rathbone had conducted several stealings on his own account. He had, for example, charged up the government with the costs of a private business trip to Ohio, and with numerous minor expenses, such as coats for his coachmen and collars for his dog, all elaborate and in keeping with their official positions. On July 28 Rathbone was dismissed from the government service and arrested in Havana. Previous to this, on May 6, Neely was arrested in New York State, and held for extradition to Cuba. A judicial order was obtained, however, by his attorneys forbidding his extradition on the ground of its unconstitutionality until a decision was rendered by the Supreme Court. The case came up for argument on December 10. The whole matter caused wide comment, because it was felt that the thefts were a betrayal of a trust held for a people who were wards of the United States, and who should have been the last to suffer from any official dishonesty.

Municipal Elections.—On June 16 the Cubans held, under the Australian ballot, their first elections for municipal officers. The qualification of electors, as drawn

up by General Wood, the military governor, after conference with representative Cubans, was either the ability to read and write, or the possession of property to a minimum value of \$250, or honorable service in the Cuban army prior to July 18, 1898. The last-named qualification seemed to be in the nature of a concession to the radical and probably numerically predominant element in the island. There were three political parties represented at the elections: the Nationalist, composed in the main of Cuban soldiers of the Spanish War and their followers; the Republican, a party more largely civilian than the Nationalist, but standing equally with it for Cuban independence and the rejection of American influence; the Democratic-Unionist, very much in the minority, and made up principally of conservative property-owners suspected of leanings toward annexation or a United States protectorate. It was estimated that under the franchise some 140,000 Cubans were entitled to vote, of whom 60,000 resided in Havana. But in Havana only 24,000 registered and less than 20,000 voted. General Alejandro Rodriguez, the Nationalist candidate for mayor, was elected by a large majority, thus showing the predominant influence of the military party. The Democratic-Union party in Havana was so unpopular because it did not declare for complete independence that it was forced to withdraw its candidate. A plan of minority representation in Havana resulted in the success of two councilmen who would not otherwise have been elected. Outside of Havana the Republicans carried more municipalities than the Nationalists. General Gomez, who was believed to be most closely allied to the Nationalists, declined to declare against the Republicans, as he said that both parties were striving without reservation for independence. In Santiago Señor Grinan was re-elected mayor. He represented the "white" as opposed to the negro vote, which was larger in Santiago than in any other province. The indifference of the electors in Santiago was even more marked than in Havana, since hardly one-fifth of those qualified voted. Several reasons were assigned for this disappointing apathy. It was stated that the unfamiliarity of the Cubans with the American balloting system checked their free use of it; that, as the officers chosen would be under the authority of the American military government, the Cubans did not look upon the election as representative of Cuban interests, and that finally, since the Democratic-Union party was practically eliminated, the contest was simply between politicians and was not of principle.

• *Constitutional Convention.*—On July 31, 1900, the War Department made public an order, issued in accordance with an executive order of July 25, providing for the election in Cuba on September 15 of a constitutional convention which should "frame and adopt a constitution for the people of Cuba." The order recited that by congressional resolution of April 20, 1898, the United States had disclaimed any intention of exercising sovereignty, jurisdiction, or control over Cuba except for its pacification, and had expressed its determination so soon as that was accomplished to leave the government and control of the island to its people. Since now the people of Cuba had established municipal governments, "deriving their authority from the suffrages of the people given under just and equal laws," they were ready to proceed in like manner to the establishment of a general government which should exercise all and final authority in the island. Therefore, a constitutional convention was ordered to adopt a constitution "and as a part thereof to provide for and agree with the government of the United States upon the relations to exist between that government and the government of Cuba, and to provide for the election by the people of officers under such constitution and the transfer of government to the officers so elected." The order provided for 31 delegates, to be chosen by popular vote under the same electoral franchise under which the municipal elections in June had been held. The number of delegates from each province were to be as follows: From the Province of Pinar del Rio, three delegates; from the province of Havana, eight delegates; from the province of Matanzas, four delegates; from the province of Santa Clara, seven delegates; from the province of Puerto Principe, two delegates; from the province of Santiago, seven delegates. There were four parties in the field—the Nationalist, Republican, Democratic-Union, and Independent. Of these, the Nationalist party, which seated the largest number of delegates, was the most radical, for it was largely composed of Cubans who had fought in the Spanish War, and who favored complete independence for Cuba without let or permit from the United States. Considerable criticism was directed by Cubans generally against the order of the War Department, because it did not provide for the ratification of the Cuban constitution by popular vote, and because it directed the convention, instead of the officers to be elected under the constitution, to enter into negotiations with the United States. It was said that the Cubans would have preferred the United States first to formally declare the complete independence of Cuba, and then the Cubans would devise such government as seemed good to them. On the other hand, it was known that many property owners in Cuba looked doubtfully upon the ability of the Cubans to institute a stable government without outside tutelage, and welcomed the plan adopted by the United States. In opening the convention on November 5

General Wood announced that a change had been made from the original order of the War Department, and that the convention was directed, first, to draw up a constitution, and, second, to declare in a separate instrument what in its opinion the relations between Cuba and the United States should be. Upon these instruments the United States would then take action. At the end of the year the convention was still in session.

Future Relations to the United States.—The question as to what political relations Cuba ought in the future to bear to the United States was widely discussed during the year. The order of the executive calling for a constitutional convention, which was directed among other things to express its opinion as to these relations, acted rather to stimulate than to lessen discussion in both countries, because it was felt that the purpose of the administration had been designedly left to wait upon the action of the convention, and that what the administration would ultimately decide to do was as much in doubt as before. The Anti-Imperialists took the ground in this discussion that the government had unreservedly pledged itself to give to Cuba complete independence, and to exercise neither jurisdiction, sovereignty, nor control in Cuba except for the island's pacification. Since now Cuba was entirely at peace, the United States should immediately fulfil its pledge and leave the island to its own devices. The Anti-Imperialists considered that the initial delay of the Executive in calling for a constitutional convention, and then the ambiguous manner in which the convention was directed to express an opinion upon the relations of Cuba to the United States, while the Executive himself did not state either what the United States desired in the way of relations or what the action of the administration would be upon the relations as defined by the convention, pointed to a desire on the part of the administration to keep a hold upon Cuba by exerting pressure to make the convention declare some especially intimate relations with the United States, and by holding over the convention the tacit threat to nullify the action of the convention if it did not so declare. The Anti-Imperialists also laid stress upon the fact that the Cubans were fully capable of complete self-government, and that all Cubans were desirous of full and immediate independence. On the other hand, considerable evidence came from Cubans themselves during the year showing that many property owners, representative of conservative interests, were not at all anxious for the United States to cut loose from Cuba. While these property owners did not in general care to express themselves unreservedly owing to the political domination in the island of the Nationalist party representing the soldiers who had fought in the Spanish War, yet there were certain isolated expressions of this opinion against the complete severance of relations with the United States. The statements made by a Cuban in an article contributed to the *Forum* may be cited in this connection. It was there said that the Cubans were deficient in the three elements requisite for the suitable organization of an independent nation. That is to say, they had neither uniformity of race, nor an approximately even distribution of population, nor sufficient political education. Reasoning from the experience of the Central and South American republics and of the republics of Haiti and Santo Domingo, it was thought that the elements of Cuban population—the white Cuban, the Cuban with African blood, and the Spaniard resident in Cuba—would inevitably disagree in the carrying on of government, and would continually strive to get the mastery of each other. The fact that the inhabitants of Cuba had been trained in servitude to Spain for so many generations would make it impossible for them to conduct a government on a reasonable and democratic basis. In this connection the writer pointed to the fact that the example often cited by Cubans of the democratic government set up by the English colonists to the New World offered no criterion in the matter, because these colonists inherited the instrument of *magna charta* and all the traditions of self-government. For these reasons the writer considered that independence for Cuba was inadvisable. While that section of the press which was in favor of close relations between the United States and Cuba employed arguments similar to the one above, a further argument was also advanced. This was to the effect that the trade between the two countries, and more especially the possibilities of trade, necessitated at least a general supervision over Cuban affairs by the United States. It was pointed out that Cuba had quite as much to gain as the United States by sustaining such political relations as would insure uninterrupted and friendly commercial alliances and would bring American capital to Cuba for the development of her industries. Certain writers, who did not claim, however, to speak for the administration, thought that the pledge which the United States had made to Cuba should be interpreted in such a way as would inure to the advantage of both countries whether or not the letter of the pledge was broken.

CALHERSON, DAVID BROWNING, ex-member of Congress from Texas, died in Jefferson, Tex., May 7, 1900. He was born in Troup County, Ga., in 1830, and after studying law under Chief Justice Chilton, of Alabama, moved to Texas in 1856. He was a member of the Legislature when the Civil War broke out; and, entering

the Confederate service as a private, was finally promoted to the rank of colonel, commanding the Eighteenth Texas Infantry. After the war he resumed the practice of law in Jefferson, and in 1873 was elected to the State Senate. In the following year he resigned his seat, and was elected to the House of Representatives, in which he thereafter served continuously until 1896. Culberson was highly regarded as a constitutional lawyer, and for many years was a member of the judiciary committee in the House. Upon the death of General Bragg, President Harrison offered him a place on the Interstate Commerce Commission, which, however, he declined. He was the father of the present United States senator from Texas.

CUMBERLAND PRESBYTERIAN CHURCH originated during the religious revival of the last years of the eighteenth century in the controversy which attended the elevation to the ministry of laymen who did not fulfil the educational and theological standards maintained by the presbytery, and organized independently in 1810. In polity it is distinctly presbyterian, and the assertion is made that its doctrinal status is a mean between Calvinistic and Arminian theology. The sect now numbers 180,192 communicants, organized for church purposes into 16 synods and 121 presbyteries, with 2957 churches, having a property value of \$3,983,073, and 1734 ministers, a decrease in membership for the last year, but a slight growth in the last ten years. Total contributions during the year amounted to \$677,191. The church supports missions in China, Japan, Mexico, and Indian Territory, and has formed plans for a general educational system to include all grades of institutions above the primary school. It already controls a number of institutions of learning, and has a well-equipped publishing house at Nashville, Tenn. The seventieth meeting of the general assembly was held at Chattanooga, Tenn., May 17-24, 1900; moderator, Rev. Henry C. Bird; stated clerk, Rev. J. M. Hubbert, Lebanon, Tenn.

CUMBERLAND PRESBYTERIAN CHURCH (COLORED), organized 1869, consists of colored constituents under the direction of the general assembly of the Cumberland Presbyterian Church. This branch of Presbyterianism is now represented by 400 ministers, 150 churches, and 39,000 members, a remarkable increase in the last decade.

CUNLIFFE, GEORGE GORDON, British major-general, died in Dorsetshire, England, January 29, 1900. He was born in 1829, and entered the army in 1847. He served in the Indian mutiny, assisting in the defeat of the rebels at Huldware and commanding detachments in the actions of Churpoorah and Surpoorah.

CURAÇAO, a Dutch colony, lying in the Caribbean Sea, north of the western part of Venezuela, consists of part of St. Martin Island and five other islands, the largest being Curaçao. The total area is 403 square miles, and the population at the beginning of 1898 was 50,548; the area and population of the several islands are reported as follows: Curaçao, 210 square miles, 29,098; Bonaire, 95 square miles, 477; Aruba, 69 square miles, 9191; St. Martin (the northern part, with an area of 20 square miles and about 4000 inhabitants, belongs to France), 17 square miles, 3984; St. Eustache, 7 square miles, 1440; and Saba, 5 square miles, 2153. The colony is administered by a governor, assisted by a council, all being nominated by the crown. Subordinate administrative officials are placed over the several islands, except Curaçao. At the beginning of 1897 Roman Catholics numbered 41,235; Protestants, 7730, and Jews, 831; there were 28 schools, with about 5500 pupils. The revenue, which is derived from import and excise duties, a land tax, and some indirect taxes, was estimated for 1898 at 638,000 guilders, and the expenditure at 700,000 guilders; for 1899, 661,000 and 669,000 guilders respectively. (The guilder is worth 40.2 cents.) Deficits are paid by Holland. The principal products are maize, beans, pulse, cattle, salt, lime, and woods. Export statistics are not available. The imports of the island of Curaçao in 1896 amounted to 2,962,668 guilders; in 1897, 2,679,924; in 1898, 1,960,970 guilders. The shipping entered at the ports of the colony in 1896 aggregated 526,148 tons; in 1897, 517,548 tons. On account of the unsettled political conditions in the neighboring countries and the low prices, especially for coffee and woods, obtained for products in the foreign markets, there was a general trade depression in Curaçao in 1899. In fact, trade has been on the decline since 1896. Curaçao, which has an excellent harbor, would be of considerable value as a port of transit and entrepôt for the trade of Venezuela, Colombia, Haiti, and Santo Domingo, were it not for the constant political unrest in these states and for an unfavorable paper currency and a high tariff.

CURLING. The curling season of 1900 opened on January 9 with the first of the series of national club medal matches, held under the auspices of the Grand National Curling Club of America. The Mitchell and McLintock medal matches stood over for a year, there being no opportunity for play. The other matches of the year were played as follows: Twenty-third bonspiel, North vs. South of Scotland, for Dalrymple medal, Van Cortlandt Lake, N. Y., January 9, won by North, 88; South, 59, a majority of 29 shots. By the rules secretary David Foulis will hold the Dal-

rymple medal for one year, or until played for. Robert Kellock won the Hoogland flag, and James Shaw the Kirkpatrick medal. Twenty-eighth bonspiel for champion rink Gordon medal, Hoboken, N. J., January 29, 3 rounds and final, won by Thomas Watt. New York Caledonian Club (Highlanders) annual point game for three prizes, Hoboken, February 9, first prize, Robert Archibald; second, Robert Lander; third, Alexander Fraser. Tenth international 2-rink match for Gordon medal, Utica, N. Y., February 20, won by United States, 44; Canada, 22. Thomas Nicholson won the Gordon international medal. First annual bonspiel at Hoboken for the John Dewar challenge cup and four gold medals, February 26, 3 rounds and final; Dewar cup won by D. G. Morrison, whose rink received the gold medals. The interest in curling in this country does not centre alone about New York, the widespread attention to the game in Minnesota, Michigan, Wisconsin, Illinois, and other middle Western States having brought about the formation of a second national organization known as the Northwestern Curling Association. The annual bonspiel for 1901 will take place about February 1, and will be followed soon after by an important invitation match, held by the Milwaukee Club, in which nearly all the clubs of Wisconsin, as well as those of Chicago, are expected to take part. The original home of curling on this continent is, of course, Canada, where a considerable Scottish population has made "the roarin' game" one of the popular winter pastimes.

CURRENCY REFORM. On March 6 the Senate, by a vote of 44 to 26, passed a bill embracing many long-discussed reforms and modifications in currency and banking regulations. The House of Representatives passed the bill on March 13 by a vote of 166 to 120, and on the following day it received the president's signature and became law. The bill as finally passed was a compromise between the Currency bill passed by the House on December 18, 1899, and that passed by the Senate on February 15, 1900. In this compromise the honors were with the Senate; for the House gave up that section of its original bill which declared for the gold standard in absolute terms by providing that while ordinary gold redemption should be confined to United States notes and treasury notes, yet at any time the treasurer might, in his discretion, and for the maintenance of the parity and equality of all United States moneys, exchange gold coin for any and all of such moneys. The House also accepted the section of the Senate bill which provided for the refunding of the national debt, while the Senate on its side acceded to the demands of the House that in the new bill provision should be made for breaking the "endless chain" of redemptions and payments by which the gold reserve had been depleted in 1893.

Currency Bill.—The main provisions are: (1) "The dollar, consisting of twenty-five and eight-tenths grains of gold nine-tenths fine, as established by Section 3511 of the Revised Statutes of the United States, shall be the standard unit of value; and all forms of money issued or coined by the United States shall be maintained at a parity of value with this standard, and it shall be the duty of the secretary of the treasury to maintain such parity." (2) The redemption of United States notes and of treasury notes (Act of July 14, 1900), amounting in all to about \$430,000,000, is to be safeguarded in the ensuing manner: in the United States Treasury Department there are henceforth established Divisions of Issue and of Redemption, and these divisions are to have exclusive control of the issue and redemption of currency. The general treasury is to turn over to these divisions the accounts and moneys properly belonging to them, and is itself to act in the future only as a collecting and disbursing agent, its business being to receive United States revenues and to pay United States expenses. The sum of \$150,000,000 in gold coin and bullion is to be taken from the accounts of the general treasury, and is permanently withdrawn from it, for the use of the Division of Redemption. This sum is to be held and used for the redemption of United States notes and treasury notes and to provide a reserve fund therefor. Notes which are redeemed—that is, notes which the Division of Redemption obtains by paying gold for from the \$150,000,000 reserve fund—must then be used by the secretary to restore and maintain the reserve fund. To this end he is authorized either to exchange the redeemed notes for any gold which may be in the general treasury, or to exchange them for gold deposited in the United States treasury or sub-treasuries, or to purchase gold with them. But if the secretary cannot build up the reserve fund by exchanging the redeemed notes for gold or by buying gold with them, it becomes his duty, if the amount of notes on hand rises above \$50,000,000; and if, consequently, the reserve gold fund falls below \$100,000,000, to restore the gold fund to its maximum of \$150,000,000 by selling bonds bearing 3 per cent. interest or less, payable at the pleasure of the United States after one year from the date of their issue. The gold received from the bonds is to be first given over to the general treasury, and is to be then taken into the reserve fund of the Division of Redemption, the general treasury receiving as equivalent the redeemed notes held by the Division of Redemption. The total of notes and gold held by the Division of Redemption, at least two-thirds of which must be gold, is thus constant at

\$150,000,000, and can neither be increased nor diminished. The redeemed notes which the general treasury receives, by exchange of gold with the Division of Redemption, may be used for any "lawful purpose the public interests may require, except that they shall not be used to meet deficiencies in the current revenues." It is believed that this provision will do away with that "endless chain" by which in 1893 notes were presented for redemption, paid out by the government to meet expenses, and then presented anew by the public for redemption. In any event, the provision makes it certain that if at any time the gold reserve sinks to \$100,000,000, the government will hold at least \$50,000,000 in redeemed notes; and so for practical purposes the gold reserve is placed at \$150,000,000, though actually and by law it is fixed at \$100,000,000. In case of financial depression the secretary, before issuing bonds for the restoration of the gold surplus, would, of course, draw into the Division of Redemption by exchange of redeemed notes whatever gold was held in the general treasury, for the general treasury no longer holds any reserve fund, but only whatever surplus there is of revenue over expenditure. To the Issue Division established in the treasury is transferred "all the coin held for the redemption of outstanding gold, silver, and currency certificates, and all of the silver dollars and silver bullion purchased under the Act of 1890 held against treasury notes." (3) As fast as this bullion can be conveniently coined the secretary is to retire corresponding amounts of treasury notes and issue silver certificates in their stead. But all silver certificates to be issued hereafter must be in denominations of \$10 and under, "except that not exceeding 10 per cent. of the total volume may be in larger denominations." From time to time, moreover, United States notes of less denominations than \$10 and silver certificates already issued of larger denominations than \$10 are to be retired and replaced with larger denomination United States notes and smaller denomination silver certificates. "National bank-notes are also removed from the small-note field by a provision that only one-third of the circulating notes of any national bank may be of denominations less than \$10." The significance of these regulations in regard to silver certificates is that, since no provision was made for their redemption in gold, and since the gold reserve was specifically set aside for other purposes, some measure had to be devised to prevent as far as possible their presentation for redemption. By making them the almost exclusive medium for small and rapid exchange, they are absorbed by and become indispensable to the general circulation. So the question of their redemption is not likely to rise. Of course, however, it would be competent for the secretary to give in exchange for silver certificates redeemed United States notes and treasury notes, and these latter would be a direct liability upon the gold reserve in the Division of Redemption. The secretary is authorized to issue gold certificates against deposits of gold in the treasury or sub-treasuries, but only so long as the gold reserve exceeds \$100,000,000; he may also suspend their issue if at any time the United States notes and treasury notes in the general treasury exceed \$60,000,000. (4) The secretary is authorized to refund any and all of the Spanish 3 per cent. war bonds maturing in 1908 and amounting to \$198,791,440, the 4 per cent. bonds maturing in 1907 and amounting to \$545,345,200, and the 5 per cent. bonds maturing in 1904 and amounting to \$95,009,700, a total of \$839,146,340. These bonds, which, with the exception of \$187,679,900, constitute the entire bonded indebtedness of the United States, may be exchanged for an equal amount of 2 per cent. bonds, specifically payable, principle and interest, in gold, and redeemable after thirty years at the pleasure of the government. The government will pay for the bonds to be refunded a value not greater than their present worth, and such that, if they were allowed to run to maturity, they would yield $2\frac{1}{4}$ per cent. interest per annum. The difference between the face value of the bonds and their worth so computed is to be paid in cash. Mr. Vanderlip, the assistant secretary of the treasury, estimated that the profit to the government on the entire refunding operation would be nearly \$23,000,000. But since the bonds the government wishes to refund will not mature for several years, their exchange for 2 per cent. bonds is optional with the holders. The advantage for investors in the lower per cent. bonds is to be found somewhat in the longer time they run, but mainly in the differential established by the Currency bill in favor of the new bonds as a basis for circulation for national bank-notes. (5) Before the passage of the Currency bill national banks could issue circulating notes up to 90 per cent. of the amount of the United States bonds deposited with the treasurer of the United States as security for such circulating notes, provided that the total amount of the notes issued did not exceed 90 per cent. of the bank capital. Under the new law a national bank "may issue circulating notes up to an amount equal to its capital stock, depositing with the United States as security an equal amount of any form of United States bonds." National banks issuing notes by depositing any form of United States bonds, except the new 2 per cent. bonds, are taxed as heretofore, 1 per cent. upon the average amount of circulation outstanding; but banks depositing the 2 per cent. bonds are to be taxed only one-half of 1 per cent. The extension of the national

banking system to small communities is provided for by a section providing that "banks with a capital of not less than \$50,000 may, with the approval of the secretary of the treasury, be organized in any place the population of which does not exceed 6000 inhabitants;" and "banks with a capital of not less than \$25,000 may, with the sanction of the secretary of the treasury, be organized in any place the population of which does not exceed 3000 inhabitants." The increase in national bank circulation which will be taken out under these provisions of the new currency law depends, of course, upon its profitability; and this profitability will be in inverse proportion to the premium on government bonds and the amount of interest which the banks can obtain from ordinary investments and lendings. Replies received by the City National Bank of Buffalo from 2987 banks, representing \$510,000,000 of the \$613,000,000 constituting in April the capital stock of all national banks, indicated that \$69,000,000 in circulating notes would be taken out immediately, and \$21,000,000 more within a year. In case of a lower bond market this amount would be further increased by \$22,000,000. The circulating notes which will be taken out by national banks organized under the new law and by State and private banks incorporated under that law is estimated at \$7,000,000. The total increase in circulation then will be from \$100,000,000 to \$120,000,000. These notes, being credit money guaranteed by government bonds and guaranteed further by the general provision that it shall be the duty of the secretary of the treasury to maintain the gold standard of value, are in essence an indirect lien upon the gold of the country, and more particularly of the treasury. Their increase by the sum of \$100,000,000, increases the proportion of governmental "promises-to-pay" to governmental "ability-to-pay." At the same time the new issues will, it is thought, satisfy the need for a more expanded and flexible currency. (6) "The provisions of this act are not intended to preclude the accomplishment of international bimetallism whenever conditions shall make it expedient and practical to secure the same by concurrent action of the leading commercial nations of the world, and at a ratio which shall insure permanence of relative value between gold and silver."

The first question asked about the Currency bill when it became law was whether the gold standard had been established beyond cavil or dispute. Mr. Overstreet, of Indiana, who in the House had charge of the bill for the Republicans, to the question, "Does the bill authorize the redemption of silver dollars in gold?" answered that it did not. The bill, moreover, does not define coin as gold, nor take away the legal-tender quality of silver or any other moneys issued by the United States, nor does it provide that all government obligations are to be paid in gold. Mr. Gage, secretary of the treasury, in an interview published on August 26, stated that a president so disposed "could order his secretary of the treasury to make payment in silver of all the public debt payable in coin and for all current disbursements of the government, which amount from \$1,500,000 to \$1,750,000 per day." Because, though the secretary is required by law to maintain the parity of all money values with the gold standard value, the means to accomplish this are largely left to his discretion, and he might conceivably be of the opinion that it could be done quite as well by the disbursement of silver as by the disbursement of gold. Another objection to the bill was that it provided for the continuance of the national debt for at least thirty years, and probably, if the banking sections were not entirely changed, for the perpetuation of the debt. Fear was also expressed lest there might occur a dangerous inflation of paper money. The total capital of all national banks when the bill was passed was \$616,208,095; the amount of circulating notes was \$253,139,367; so that, omitting the new banks which it was expected would be organized, the total possible increase of currency was over \$363,000,000. Leaving this aside, many thought that a very profitable undertaking had been needlessly and gratuitously offered to the banks, and that an unwarranted abrogation had been made by the government of its power of issue. See article BANKS—BANKING and article UNITED STATES (paragraphs Finances, National Debt, etc.)

CURTIS, WILLIAM B., born in Saalsbury, Vt., January 17, 1837, widely known throughout the country as the "father of American amateur athletics," died July 2, 1900. His ambition in youth was to go to West Point; and this hope being unrealized, he followed the entire course of study on his own account and laid the foundation for a remarkable knowledge of mathematics. His first athletic fame was at Chicago about 1860, where he became known as the "Yankee Turner." He served through the Civil War with distinction, and then came to New York, where in 1868 he and others founded the New York Athletic Club. He was at that time a well-known all-around athlete. In 1875, about which time he was probably at his best as an athlete, he assumed the managing editorship of the *Spirit of the Times*, a sporting paper which has become well known as an authority in its field. Curtis was one of the founders of the Amateur Athletic Union, and served for a time as its president. He was also a founder and president of the National Skating Association, which fostered a sport of which he was especially fond. (See SKATING.) In recent

years he has been more widely known as a referee, in which capacity he has been noted for his ability and absolute fairness. In May, 1900, he was presented with a loving cup for some twenty years' service as referee at the games of the Inter-collegiate Athletic Association. To his influence, probably more than to that of any one else, is due the high standard of American amateur sport. An enthusiastic nature lover, of late years he devoted much time to walking and mountain climbing, and founded the Fresh Air Club, of which he was pathfinder. It was in the company of one of the club members, *en route* to the summit of Mount Washington to be present at the annual field meeting of the Appalachian Mountain Club, that he met his death, on July 2, 1900, in an ice-storm.

CUSHING, FRANK HAMILTON, American ethnologist, died in Washington, D. C., April 10, 1900. He was born at Northeast, Penn., July 22, 1857, and in boyhood became interested in Indian relics. In 1875 he was commissioned by Professor Spencer F. Baird, of the Smithsonian Institution, to make surveys and collections for the National Museum, and in the following year he was curator of the museum's ethnological exhibit at the Centennial Exposition. He was assistant ethnologist in Major J. W. Powell's New Mexican expedition in 1879; and at his own request was left with the Zuni Indians, with whom he lived for three years and subsequently for another period of three years. Adopting the customs of the Indians, he was admitted to their tribal council and elected to their priesthood, and was thus enabled to discover many of their myths and the nature of Indian secret societies. In 1881 he discovered the ruins of the Seven Cities of Cibola. He conducted excavations in these and also in the buried cities of southern Arizona, which he discovered in 1888. In 1895 he discovered the remains of a sea-dwelling people on the gulf coast of Florida, and in the following year led thither the Pepper-Hearst expedition. At the time of his death he was connected with the Bureau of American Ethnology at Washington. Cushing was one of the most prominent authorities on the ethnology and archæology of the Indians, especially of the Zuni, Pueblo, and other tribes of New Mexico and Arizona. Besides many reports, monographs, and magazine articles, his writings include: *My Adventures in Zuni*; *The Myths of Creation*; *Manual Concepts*; or, *Hand-Made Mind*; *The Arrow*.

CYCLING. The year 1900 was marked by two important events in the cycling world—the complete divorce of the League of American Wheelmen from the racing side of bicycling and the assumption of racing control by the new National Cycling Association, which had been considered an outlaw organization by the L. A. W., but which practically forced the older body to relinquish its hold on racing matters. A majority of the league's own members, however, had favored the abandonment of racing and the devotion of the league's efforts to the furtherance of the interests of wheelmen at large. The opposition was largely among those in official control of the league, and the formation of the rival racing organization was due in part to the L. A. W.'s mismanagement in certain particulars and to its vacillating policy on the amateur question. The membership of the L. A. W. is now, in round numbers, 25,000. The causes which led to its present diminished numbers are partly the dissatisfaction of wheelmen over league affairs and in part the passing of general wheeling as a fad and the rise of golf. The importance of the results achieved by the league in the direction of good roads, legal rights for wheelmen, conveniences and comforts for tourists, and the popularization of the wheel can scarcely be overestimated. It is now left free to devote its entire energies to these and kindred objects, and in consequence it has before it the possibility of entering upon its period of greatest usefulness. It is officially stated that the future purposes of the league will especially lead toward the construction of good roads, in which work it will have the co-operation of the automobilists. In sections of the country where good roads are not to be obtained immediately, three-foot side paths will be built and paid for by the league. A series of five-cent booklets is being issued under the name of the "L. A. W. Good Roads Library," the numbers now ready being *Country Roads*, *Macadam Roads*, *Cycle Paths*, and *Wide Tires*. Besides matters relating to L. A. W. and N. C. A. interests, the year was distinguished by a continued general decline of public interest in racing and the disbanding of many bicycle clubs, whose usefulness is apparently a thing of the past. It should not be considered that general wheeling is doomed because of the apparent lessening of interest. From many standpoints cycling has a bright future as a sport, and it should be remembered that the best use of the bicycle is for locomotion and touring. See SPORTS.

CYPRUS, an island in the Mediterranean, belonging to Great Britain since 1878. It is situated at a distance of 60 miles from the coast of Asia Minor, and its total area is estimated at 3584 square miles. Its population, estimated on a basis of 8 per cent. annual increase, is in the neighborhood of 230,000 (209,286 in 1891). Of these, according to the census of 1891, 161,360 belonged to the Greek and other Christian churches, while 47,926 professed Islam. The administration of the island is vested

in a high commissioner, appointed by the crown and assisted by an executive council of 3 members and a legislative council of 18 members, of which 6 are office-holders and 12 elected on a property qualification. The capital of the island is Nicosia, with a population of 12,515 in 1891. Agriculture is the main industry of the inhabitants, and the principal products exported are wheat, barley, olives, cotton, wine, silk cocoons, hides and skins, wool, fruits and vegetables. Total value of exports and imports for 1898-99, £343,687 and £228,206 respectively. The revenue for 1898-99 was £210,284, and the expenditure £132,973. There were 340 elementary schools, with an attendance of 17,460. In accordance with the convention of 1887 the sum of £92,800 is paid annually to the Turkish government. In 1899 the island received from the British government a loan of £314,000 for the building of a railway from Nicosia to Famagosta.

CZECHS. See AUSTRIA-HUNGARY.

DA COSTA, JACOB M., M.D., LL.D., a distinguished physician of Philadelphia, died in that city September 11, 1900. He was born at St. Thomas, West Indies, and coming to the United States as a boy, received his medical education at Jefferson Medical College, Philadelphia, in which he was subsequently appointed lecturer in clinical medicine and professor, occupying the chair of the theory and practice of medicine from 1872 to 1891, when he was made emeritus professor. Dr. Da Costa was one of the organizers of the Pathological Society of Philadelphia, and in 1895 he was chosen president of the College of Physicians of that city.

He was also president of the Association of American Physicians, and received the degree of Doctor of Laws from the University of Pennsylvania and Harvard. He was the author of *Medical Diagnosis*, a work that has been translated into several foreign languages; *Strain and Overaction of the Heart*; *Harvey and His Discovery* and other valuable works in medicine, aggregating 54 titles.

DAHOMEY, a French colony, with a coastline of about 70 miles, on the Gulf of Guinea, touches German Togoland on the west, British Lagos on the east, and stretches northward to the Niger River. The estimated area of the country is 50,000 square miles, and the estimated population 1,000,000. The colony is under the administration of the governor-general of French West Africa, who is stationed at St. Louis in Senegal, but a governor and administrative council are resident at Porto Novo in Dahomey. This town has about 50,000 inhabitants; other centres of population are Abomey, Grand Popo, Whydah, Kotonu, Agoue, and Allada. The colony has become self-supporting, for the local revenue and expenditure for 1900 balanced at 1,885,000 francs. The natives, who are pure negroes, are engaged, in the coast region, in the cultivation of corn, yams, manioc, and potatoes, and in the forests they take palm kernels and palm oil, which two commodities constitute the chief exports. Ivory and rubber are also exported. In 1898 the imports were valued at 9,994,500 francs, about 20 per cent. coming from France; and the exports 7,538,700 francs, about 34 per cent. being sent to France. The value of the palm kernels exported was 4,251,400 francs, and of the palm oil, 2,729,700 francs. Trade is carried on largely through the ports of Whydah and Kotonu. The latter town is connected by telegraph with Abomey (70 miles inland), and the Niger and the Senegal. The construction of a railway from Kotonu to the Niger has been proposed. In the spring of 1900 the native king, who was resident at Abomey, the old capital of the kingdom of Dahomey, was deposed by the French authorities and interned at Porto Novo.

DALY, MARCUS, Montana millionaire and "copper king," died November 12, 1900, at the age of 58. He was born in Ireland in 1842, and began his Western life when a boy, being employed on a farm near San Francisco. He then worked at mining, and without schooling, but by careful study of the rocks in the mines where he was laboring made himself a mining expert and became a recognized authority in the profession. While engaged as expert for Walker Brothers in the neighborhood of Salt Lake City, Utah, he disguised himself as a working miner, and secretly explored the Alice Mine. On the strength of his report the property was purchased, and Daly was made superintendent. He was soon able to make investments on his own account, and bought for \$30,000 the Anaconda silver mine in Montana. After working it for silver to a depth of 120 feet, he struck one of the richest copper deposits in the world, and his fortune was made. In his latter years Marcus Daly became involved in a bitter feud with his former partner, William A. Clark, and this enmity had an important effect on political and industrial conditions in the State of Montana. In a spirit of revenge he balked Clark constantly, both in his business enterprises and in his efforts toward political advancement. There was a struggle between them for the Democratic leadership of Montana, in which one of the chief points involved was the question as to whether the State capital should be located at Helena or Anaconda. When Clark was elected to the United States Senate Daly carried the fight to Washington, and by charging Clark with wholesale bribery caused the Sen-

ate to unseat him. (See MONTANA.) As the owner of race-horses Marcus Daly was a well-known figure on the American turf. He enjoyed a reputation for his charities.

DALY, WILLIAM D., member of Congress from New Jersey, died July 31, 1900. He was born in Jersey City in 1851, and after a common school education and some time spent in an iron foundry, took up the study of law. He became one of the leaders of the criminal bar, and in 1885 was appointed by President Cleveland assistant United States district attorney. He was a prominent leader of the Democratic party, and served in the New Jersey Assembly in 1889 and later in the State Senate. In 1896 he was chairman of the State Democratic Committee and stumped the State for Bryan, being one of the few Democrats of the State to actively support the ticket.

DAMS. The construction of the Wachusett dam for the Metropolitan Water Supply, of Boston, Mass., and the vicinity, was commenced in the latter part of 1900. The preliminary work done previously included a temporary diverting dam and two flumes, one of which, built of timber and having a width of 40 feet, diverts the water past the dam site. The main dam and two immense earth dykes will form a reservoir $8\frac{1}{2}$ miles long, with a maximum width of 2 miles, a shore line of 35 miles, a maximum depth of 120 feet, an average depth of 46 feet, and a storage capacity of over 63,000,000,000 gallons. This is nearly twice the capacity of the new Croton reservoir, and is surpassed, it is believed, only by the Periyar reservoir in India. Although the new Wachusett dam will provide a reservoir with greater storage capacity than is obtained with the Croton or Cornell dam, yet it will have a probable maximum height above rock foundation of only about 200 feet (the exact figures to be determined by the final excavations), as compared with 291 feet in the case of the new Croton dam. The Wachusett dam, therefore, ranks second among the dams of the world both in height and in storage capacity provided. At the highest portion the Wachusett dam will have a probable width of 175 feet at the base, while the width at the very top will be $25\frac{3}{4}$ feet, but 9 feet below the top of the coping the width will be only $22\frac{1}{2}$ feet. The main dam will be 850 feet long, with 50 feet of terminal structure in addition at each end. There will also be a masonry core wall, and earth embankment extending some 100 feet farther toward the south-east bank, and at the other end there will be a masonry waste weir about 450 feet long. The length of the whole structure will amount to about 1500 feet. The dam is made unusually heavy in cross-section on account of the comparatively large population dwelling just below, which would be endangered in case of its failure. The body of the dam will be built of large granite blocks, of irregular size, and the exposed faces will be of rock-faced granite ashlar in ranged courses, well bonded into the rubble masonry. There will be two gate chambers near the middle of the main dam, one built into the upper part of the structure, and the other at the base on the lower side. Four 48-inch pipes will pass through the dam from chamber to chamber, with their centres 109 feet below the full-water line. As there will be an available head of over 100 feet with a full reservoir, it is proposed to utilize the water before it passes out from the lower gate house, and develop power for sale. The water then passes into the aqueduct, which has a daily capacity of 300,000,000 gallons.

The dam was designed under the direction of F. P. Stearns, chief engineer of the Metropolitan Water Board, and the plans were prepared by Reuben Shirreffs and, after his resignation, by Alfred D. Flinn. Bids for its construction were received on September 25, 1900, and the contract was awarded a few days later to the lowest bidder, McArthur Brothers, of Chicago, Ill., for \$1,603,633. The sum named is a relatively small portion of the total estimated cost of the dam and reservoir, as several millions of dollars will be required for the one item of stripping organic matter (muck, etc.), from the site to guard against trouble from tastes and odors. An article describing this dam at length, written by Mr. Flinn, appeared in the *Engineering News* of September 13, 1900.

A steel dam was in process of construction during 1900 about twelve miles from Houghton, Mich., by the Wisconsin Bridge and Iron Company, of Milwaukee, who have previously erected other dams of this material. This structure has a length of 472 feet and a maximum height of 74 feet. It is composed of concave steel plates, supported by steel bents or A-shaped frames, 8 feet apart, measured along the length of the dam. A portion of the steel structure rests on a bed of concrete 64 feet long and 14 to 25 feet thick, which apparently extends across the bottom of the valley. In December, 1900, most of the concrete was in place and the steel work had been started.

The high rock-fill dam of the Denver Union Water Company, some 50 miles from Denver, Col., was damaged while under construction on May 3, 1900, by a sudden and unprecedented rise in Goose Creek, the waters of which it was to impound when completed. The dam was being built across a narrow cañon to provide water for the

city of Denver. It was to have a total height of 210 feet, and was to have been composed of rock and stone loosely dumped into place from a bridge stretching across the cañon. The lower slope was to be protected at the base by a concrete and stone masonry wall, and a $\frac{3}{8}$ -inch steel plate, or core, was to extend all the way up, backed by 2 feet of concrete, and with hand-laid stone between the concrete and the rock-fill. The steel plates were to be riveted together at the edges and secured to 6-inch steel I-beams embedded in the concrete. At the time of the accident the toe-wall had been extended to the full height designed, and the rock-fill had been carried up some 50 feet, or about one-fourth of its total proposed height. As a result of heavy rain, a volume of water in the stream far in excess of the capacity of the channel provided to divert it was produced, and the partially completed structure was overtopped. Some of the rock-fill was washed out, but the solid toe wall was left standing. The flood caused some damage to property below, and apparently has raised strong objections to the completion of the dam on the original lines, since it was reported late in the year that the rock-fill plan would be abandoned and a full masonry section substituted. Mr. C. P. Allen, of Denver, Col., is the chief engineer of the Denver Union Water Company.

Failure of the Austin Dam.—On April 7, 1900, the great masonry dam at Austin, Tex., on the Colorado River, was destroyed by an unprecedented flood, resulting in loss of life and property. The dam was built in 1890-93, to furnish a water supply for the city of Austin and to provide water-power for its industries, including the electric lighting and electric railway systems. The construction was managed by a Board of Public Works created for the purpose, and a notable feature of the history of the undertaking was the number of engineers who were connected with it. Some of these resigned, alleging that they were hampered in their work by the city authorities. The dam was about 1100 feet long on the crest, about 60 feet high, 66 feet wide at the bottom and some 20 feet thick near the top, which was rounded off to allow an easy flow of water over the full length of the crest. The dam was built of rubble masonry with a granite facing, and the quality of the material and of the workmanship above the foundation has not been questioned. On May 30, 1893, before the dam was put in use, the foundation of the gate-house was carried away by a stream from the lake which cut under the east bulkhead, this break in the head-gate masonry costing the city \$97,000. Leaks occurred also at subsequent dates. Previous to the failure, it is held by some who have studied the problem, a gradual undermining of the foundation of the toe of the dam had taken place, and a considerable portion had been swept or scoured away, leaving the masonry of the toe, of granite blocks of 6 tons weight, wholly unsupported. During the preceding year there was a tremendous flood, which may have weakened the dam and washed out the foundation.

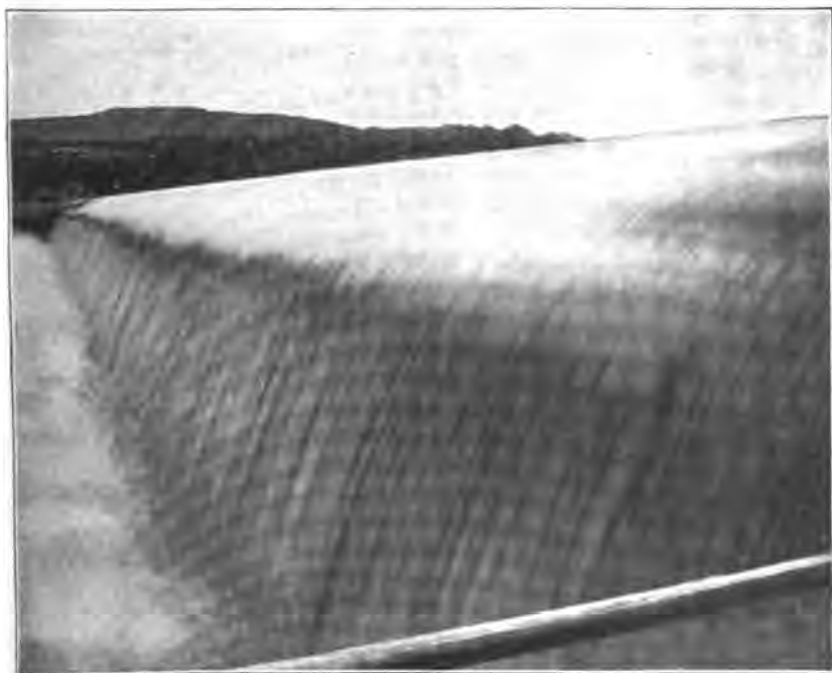
During the twenty-four hours preceding the failure of the dam there had been a rainfall of 5 inches on ground already wet.

The channel of the Colorado River above Austin is, for the most part, a sinuous gorge held in by limestone hills and mountains, which it drains. Just above several rivers empty into the Colorado, and the configuration of the country is such that the water runs off rapidly into streams. The river rose very rapidly until, at 11:20 A.M. on April 7, when the lake level had reached 11.07 feet above its crest, the dam gave away at a point about 300 feet from its east end. It is almost certain that the dam failed by sliding on account of the soft and friable nature of the limestone on which it rested. But whatever the cause, two whole sections of the dam, from top to bottom, each about 250 feet long, were carried down stream bodily, without overturning, and left standing some 60 feet beyond their former position. About 40 minutes after the break one of these detached sections was broken up and disappeared, and during the night considerably more than half the other section also broke up, but a part of it was still standing at last accounts, as were the two ends of the dam left in place when the break occurred. During the same night a part of the river wall of the power house fell. The break was described and its probable causes were discussed at considerable length in the technical journals. The history of the structure, including the failure, forms *Bulletin No. 40 of the Water Supply and Irrigation Papers* of the United States Geological Survey, written by Professor T. U. Taylor.

DANISH WEST INDIES, three islands—St. Thomas, St. Croix, and St. John—lying to the east of Porto Rico and belonging to Denmark, have a combined area of 139 square miles and a population of about 35,000. This area and population is divided as follows: St. Croix, area, 74 square miles; population, 19,783; St. John, area, 42 square miles; population, 984; St. Thomas, 21 square miles; population, 14,389. The capital of the group is Charlotte Amalie, St. Thomas, while Christianstadt, on St. Croix, is the second city in importance. The inhabitants are chiefly negroes. Very little Danish is spoken in the islands, English being generally used. Formerly the islands were under cultivation to a considerable extent, but their old prosperity has largely vanished. The negroes engage in sugar culture, how-



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THE AUSTIN DAM, BEFORE THE BREAK.—1. The dam during dry weather. 2. The dam, with seven feet of water pouring over the edge—shortly before the break.

ever, and sugar and rum are the principal exports. The United States takes the largest share of the exports, while France leads in the import trade. In 1899 the exports were: To the United States, \$707,700; France, \$57,900; Denmark (in 1898), \$56,280; Great Britain, \$1256. The total imports in 1898 amounted to \$1,142,000; in 1900, \$733,400. Business depression was very marked in 1899 and 1900. St. Thomas has an excellent land-locked harbor, which is now of little importance, except as a coaling station.

During 1900 there were continued rumors of the purchase of the Danish islands by the United States. In May this proposed sale was regarded as given up. In November, however, Mr. Charles H. Allen, governor of Porto Rico, paid the islands a visit, which, though officially declared to have no connection with any contemplated purchase, was regarded in many quarters as relating, in an ulterior way at least, to such a purchase. The Porto Ricans, it appeared, disapproved of the acquisition of the Danish islands by the United States, fearing that St. Thomas would be a formidable rival to San Juan for the proposed American naval station in the West Indies. An expenditure of several million dollars for dredging would probably be required to prepare properly the San Juan harbor for the establishment of a naval station. It is interesting to note also that many inhabitants of the islands disapprove of the proposed sale. On October 29, 1900, the colonial council adopted by a small majority a resolution requesting the King of Denmark to retain the islands under Danish sovereignty. It was stated at the close of the year that the United States government, through its minister at Copenhagen, had expressed its willingness to pay 12,000,000 kroner (\$3,216,000). See COLONIES.

D'ANNUNZIO, GABRIELE (pseudonym for Rapagnetta), Italian novelist, dramatist, and politician, aroused wide interest during the year by his symbolic play, *La Gloria*, and his novel, *Il Fuoco* (*The Flame of Life*, translated by Cassandra Vivaria). *La Gloria*, the most ambitious of his dramas, is probably the outcome of d'Annunzio's recent identification with the political life of Italy. *Il Fuoco*, the story of an artist and a tragedian, is believed to recount the love affairs of d'Annunzio with Eleanor Duse. D'Annunzio denied this, but his assertion was not widely believed. Both in France and in Italy the publication of the work excited much criticism on the ground that it was an improper *exposé* of private affairs. Marcel Prevost sharply attacked d'Annunzio on this and other grounds in the *Figaro*. Incidentally Prevost admitted that he had not read the work in question, and this led to an amusing answer by d'Annunzio, in which he said that if any one accused him of revealing private affairs the accuser said that which was not true. However, said d'Annunzio, I have not read the criticism of Marcel Prevost.

D'Annunzio is now 36 years of age. He was educated in the College of Prato, Tuscany, and at the University of Rome. He has figured in political life as a conservative member of the Chamber of Deputies, but in 1900 he suddenly became disgusted with the party of the Right and joined the radical Republicans. He said that the Radicals represented the truth, for which he, d'Annunzio, had always stood. His first books of verse, *Canto Novo* (1882) and the *Intermezzo de Rime* (1883) are characterized by unbridled passion and by beauty of form and expression. These qualities are likewise found in his later poetry: *Isotheo Chimera*; *Elegie Romane* and *Poema Paradisiaco*. His prose work includes: *Terra Vergine* (1882); *Il Libro delle Vergini* (1884) and *San Pantaleone* (1886); two volumes of short stories full of the most repulsive naturalism: *Il Piacere* (1889); *L'Innocente* (1892), and *Il Trionfo della Morte* (1894); three novels comprising a series, entitled *I Romanzi delle Rose*; *Giovanni Episcopo* (1892); *Vergini delle Rocce* (1896), the first part of a romantic trilogy, and the above-mentioned *Il Fuoco* (English translation in preparation). His principal works have been translated into French by Hérèlle. He is best known perhaps by *Il Trionfo della Morte*, which has been translated into various European languages (English translation, 1898). D'Annunzio has lately produced several dramas, modelled after Maeterlinck, which have had considerable vogue. They include: *La Città Morta* (1898); (*The Dead City*, translated into English by Arthur Symons); *Dream of a Spring Morning* (1897), written for Signora Duse, and *Dream of an Autumn Sunset* (1899), two parts of a quatuor as yet unfinished, which show the poet at two extreme moods, the one morbid, the other passionate; *La Gioconda* (1899), played by Signora Duse in London in 1900 (English translation by Arthur Symons), and *La Gloria*, partaking of the dominant qualities of each of the preceding. He has written two other dramas, *The Crowd* and *Fratre Sole*, founded on the story of St. Francis.

D'Annunzio is primarily a genius of the decadent school. His novels and dramas are rich in imagination, and show remarkable intuition into the workings of the passions. Their moral tone, however, has provoked sharp criticism from many quarters. D'Annunzio, on the other hand, claims that his work is profoundly moral, because his representation of life is true, and truth cannot but be moral. D'Annunzio's favorite theme is the melancholy strife between man's higher and lower

nature. In both *L'Innocente* and *Il Piacere* the leading characters, through powerlessness to free themselves from corrupting influences, lose the pure delight which they would have otherwise attained.

DARFUR, a province of the British-Egyptian Soudan, is bounded by the province of Kordofan on the east, the province of Bahr-el-Ghazal on the south, and by the French possession of Wadai on the west. To the north are the desert regions of the eastern Sahara. The area and population are unknown, but have been estimated at 200,000 square miles and 1,500,000 respectively. The influence of Great Britain in Darfur was admitted by agreements with Germany and Italy in 1890 and 1891, and was strengthened by the success of the Anglo-Egyptian expeditionary force under General Kitchener in 1898. The western limits of Darfur were defined by an Anglo-French treaty signed March 21, 1899. The capital is El Fasher. The Egyptian Soudan is treated in the paragraph on that title in the article EGYPT.

DARTMOUTH COLLEGE, at Hanover, N. H., founded in 1769. A notable feature of the year 1900 was the creation of the Amos Tuck School of Administration and Finance, established by the gift of Mr. Edward Tuck, '62, as a memorial to his father, a member of the class of '35. It is a graduate school, the object of which is to train college graduates for a business career in a course of instruction covering two years. On July 5 occurred the opening of the first session of the summer school, which has been instituted principally for the benefit of teachers in primary and secondary schools. A graduate department of pedagogy was organized at the beginning of the college year of 1900-01. It is designed to give to men holding the bachelor's degree a year of special training to fit such men for the work of instruction and management in secondary schools. Fayerweather Hall, providing for 81 students, was added during the year to the dormitory system, which now includes 4 buildings, and accommodates 250 students. At present Dartmouth has 57 instructors and 741 students, distributed by departments as follows: College, 642; Tuck School, 15; Thayer School of Civil Engineering, 36, and medical, 90. The total income for the last academic year was \$105,000, exclusive of gifts, which reached \$350,000. The institution is endowed to the extent of \$2,300,000, and has a library of 85,000 volumes. See UNIVERSITIES AND COLLEGES.

DARWINISM. See ZOOLOGICAL LITERATURE and ZOOLOGICAL SOCIETIES.

DAUGHTERS OF THE AMERICAN REVOLUTION, a patriotic women's society, organized in Washington in 1890, and in 1899 had a membership of 27,000. There are chapters also in Hawaii, in England, and in Canada. President-general, Mrs. Daniel Manning; corresponding secretary-general, Mrs. Kate Kearney Henry, 902 F Street, Washington, D. C. The work of the national society during the Spanish-American War was commended by the President of the United States and other officers of the government. A hospital corps was established at the headquarters of the society in Washington, which was in constant communication with the medical department of the army and navy. The qualifications of all nurses sent to the front were determined by the officers of the hospital corps, of which Dr. Anita Newcomb McGee was director.

DAUGHTERS OF THE KING, organized in the Protestant Episcopal Church in 1885 for the purpose of spreading "Christ's Kingdom among young women." President, Mrs. E. A. Bradley; secretary, Miss Elizabeth L. Ryerson, 281 Fourth Avenue, New York City. The work is done through parochial chapters. The official organ is *The Royal Cross*.

DAUGHTERS OF THE REVOLUTION, a national women's patriotic society, organized in New York City in 1891 to perpetuate the spirit of those who achieved American independence, to commemorate events of the Revolution, to preserve and to publish records of that period, and to encourage historical study. President-general, Mrs. Adaline W. Sterling, of the New Jersey society; corresponding secretary-general, Mrs. George B. Wallis, Jr., of the New York society. Headquarters, 156 Fifth Avenue, New York City.

DAVIDSON, THOMAS, educator, scholar, and lecturer on the philosophy of religion, art, and literature, died on September 14, 1900, at Montreal. Born in Aberdeenshire, Scotland, on October 25, 1840, he graduated from the University of Aberdeen in 1860, and spent three years as rector of the Latin Grammar School of Old Aberdeen. He came, in 1866 to the Collegiate Institute of London, Canada, and a year later went to Boston, thence to St. Louis, eventually becoming principal in a branch high school, writing in the meantime for the *Round World* (of New York) and *Western Educational Monthly*. He removed to Cambridge, Mass., in 1875, and devoted himself to scientific and literary pursuits. His works embrace a translation of the *Fragments of Parmenides* (1869), in English hexameters, with a commentary; a translation from the German of Bleek's *On the Origin of Language* (1869); *A Short Account of the Niobe Group* (1874); archaeological disquisitions under the



THE AUSTIN DAM, AFTER THE BREAK.

title: *The Parthenon Frieze and Other Essays* (1882); *The Philosophical System of Antonio-Rosmini-Serbatì* [translated, with a Sketch of the Author's Life, Bibliography, Introduction, and Notes] (1882); a translation of Rosmini's *Anthropology* (1883), and *Psychology* (3 volumes, 1884); *The Place of Art in Education* (1886); *Giordano Bruno* [and the Relation of His Philosophy to Free Thought] (1886); a translation of Scartazzini's *Handbook to Dante*, with notes and additions (1887); *Aristotle and [Ancient and Modern] Educational Ideals; Prolegomena to Tennyson's "In Memoriam," The Education of the Greek People [and its Influence on Civilization]*; finally, *A History of Education* (1900). If one adds to these his studies of Aquinas, his lectures on Shakespeare, and the countless articles in periodicals, then the range and variety of his researches will become apparent. He was fond of travel and study, being able to speak and read German, French, Italian, and modern Greek with facility. But for him the world might still be ignorant of the epoch-making writings of Rosmini, who incurred the displeasure of the Vatican authorities without giving them sufficient grounds openly to condemn his works. A believer in immortality and freedom of utterance, he was equally interested in the austere author of the *Summa Theologia*, in the "heretical" writings of Bruno and the mysticism of Tennyson.

With an impractical spirit he took part in various reform movements, from which he usually withdrew in a short time, because he found the people in the movement below his high ethical ideals. Such was the case—e.g., when he joined the Bryan party in New York in 1896. In the Adirondacks, at Keene, Professor Davidson established his Summer School of the Culture Sciences, with a view of furthering the growth of the Fellowship of New Life, which he had founded in the United States and England. But, according to himself, his whole life-work found its proper field of application only two or three years before his death. In 1898 he formed a class of young men and women among the Russian Jews of the East Side of New York (166 Madison Street), where over a hundred eager minds were moulded into future workers for the weal of the community on the lines laid out by him. Large of frame, genial, with a majestic bearing, he captivated one by the sheer charm of personality, inspiring absolute and immediate confidence. There was a fatherly affection in his relations to his pupils, and they reciprocated by a filial devotion.

DAVIS, CUSHMAN KELLOGG, chairman of the Senate Committee on Foreign Relations, died at his home in St. Paul, Minn., November 27, 1900. He was born at Henderson, Jefferson County, N. Y., in 1838, and in the same year his family removed to Waukesha, Wis. Cushman K. Davis graduated from the University of Michigan in 1857 and immediately entered upon the study of law. After serving in the Union Army, first as lieutenant and later as assistant adjutant-general, he settled at St. Paul, Minn. He was a member of the Minnesota Legislature in 1867 and United States district attorney for Minnesota from 1868 to 1873. In 1874 he was elected governor of Minnesota upon a platform radically antagonistic to corporate interests. It is probable that his election was primarily due to a lecture which a few years previous he delivered in many places, entitled "Modern Feudalism." This lecture was a denunciation of corporations and especially of railways. In later years Senator Davis modified to a considerable extent his earlier ideas on this subject and was frequently employed as counsel by large corporations. While Mr. Davis was governor he was a candidate for election to the United States Senate. He was unable, however, to overcome the opposition to him in his own party, and his defeat caused his retirement from politics until 1887, when he was elected to the Senate. During his retirement Senator Davis considered himself permanently retired from public life, and devoted himself largely to literature and an exhaustive study of Shakespeare. During his first term in the Senate he was appointed chairman of the Committee on Pensions, and was identified with the Pension act of 1890, which greatly expanded the pension rolls and increased the amount of money paid by the government thereunder. During his second term he opposed with much vigor President Cleveland's attempt to reinstate the Queen of Hawaii, and advocated the plan of annexation proposed by President Harrison. At the same time Senator Davis defended President Cleveland's Venezuelan policy and became famous as an unsparing enemy of those who, in the labor troubles of 1894, denied the right of the federal authority to maintain order and protect the United States mails. Upon the retirement of John Sherman from the Senate Senator Davis was appointed to his place as chairman of the Committee on Foreign Relations. In this position he wielded wide influence during President McKinley's administration; for the consent of the Senate, at least by inaction, was absolutely requisite in the plans of the administration in Cuba and the Philippines, and for practical purposes the Committee on Foreign Relations was the Senate in this respect. Upon the termination of the Spanish-American War Senator Davis was appointed one of the peace commissioners and was later influential in obtaining the consent of the Senate to the Paris treaty. Upon his first entrance to the Senate Senator Davis was widely

known as an orator, but in after years his voice failed and his speaking, from an oratorical point of view, attracted little notice in the Senate. In 1899 Senator Davis was for the third time elected to the Senate and his term of office would have expired in 1905.

DAWSON, A. J., whose new volume of short stories, *The African Nights' Entertainment*, was one of the successful books of 1900, is an English story writer not yet 30 years of age. He left the grammar school when still very young to become apprenticed to a Glasgow shipping company. After three years on shipboard he ran away at Melbourne, Australia, and began a life of adventure. He visited the South Sea Islands, New Zealand, India, Mauritius, South America, West Africa, Morocco, Portugal, California, and all parts of Europe. In 1894 he settled down to story writing in London, but has continued to vary his life with occasional Oriental wanderings as special correspondent for the *Daily Express*. His short stories have appeared in the leading English periodicals. In 1895 he published his first long novel, *Middle Greyhess*. *Mere Sentiment*, a collection of short stories, came out shortly after and another novel, *Leeway* (by "Howard Kerr"). This early work was not enthusiastically received. *The Bight of Benin*, West African yarns, and *God's Foundling*, an excellent character sketch, first brought him fame. His other books are: *Bismillah*; *The Story of Ronald Kestrel*, and *Daniel Whyte*. *The African Nights' Entertainment* are fiery stories of love and life in northern Africa, where Eastern and Western civilization touch each other and conventionalities are swept away. A new novel, *The Half-Caste*, has been announced.

DELAGOA BAY, an indentation in the coast of Portuguese East Africa, notable for the prominence it achieved in 1900 in the course of the war between Great Britain and the South African Republic. The railroad from Lourenço Marques on the northern side to Pretoria in the Transvaal was the only route not controlled by the British, and the eagerness of the Boers to use it, even in violation of the neutrality of Portugal, was equalled only by the anxiety of Great Britain to prevent it. For a time contraband articles were taken openly from ships in the bay and carried inland by the Boers and their agents, and when the Portuguese officials enforced their laws the same class of goods was smuggled. Great Britain, by a superlative interpretation of her rights, established a blockade of the bay, and, seizing a number of vessels, exercised the right of search. On December 29, 1899, the German steamer *Bundesrath* was seized in this way by her majesty's cruiser *Magicienne*, and on board were found three officers and seventy men on their way to service with the Boers. After detention at Durban in Natal the *Bundesrath* was allowed to proceed, and nothing came of the incident on account of England's complete disavowal of wrong intention in the matter and the fact that nothing contraband was found. Reports have been circulated from time to time of the proposed purchase of Delagoa Bay by Great Britain, but notwithstanding the great advantage such an acquisition would bring, its achievement seems very unlikely because of the unwillingness of Portugal to relinquish any of her possessions to a great Power.

The Delagoa Bay Award, announced on March 29, terminated a dispute that had been under arbitration for more than ten years. The case follows: The Delagoa Bay Railroad, extending from Lourenço Marques to Pretoria, was constructed by an American (Colonel McMurdo, of Kentucky), who obtained a concession from Portugal in 1883. The line was started in 1887, and upon the death of the contractor before its completion, which thus technically nullified the contract, was seized by the Portuguese government in 1889, at the instance, as has since been proved, of President Kruger, of the South African Republic, who foresaw the advantage which would accrue to him in its possession by a friendly Power. Remonstrance to this seizure by Portugal was made by McMurdo's country and also by Great Britain in behalf of the backers of the enterprise, with the result that arbitration was agreed upon and the Swiss court instituted. After what seem to have been needlessly long deliberations, the court fixed the indemnity of Portugal to the United States and Great Britain at \$3,062,800, with interest at 5 per cent. from June 25, 1889, in addition to the \$140,000 paid on account in 1890. The verdict is disappointingly inadequate in the opinion of both the plaintiffs, since, as all three parties in the dispute have agreed to share equally the cost of litigation, little or nothing remained for the original shareholders in the road. In addition, Great Britain is considered to have been disappointed by the destruction of her hope of acquiring the bay from Portugal as security for the money she expected to advance for the payment of the award. The smallness of the sum involved made this unnecessary, and payment was made November 22.

DELAWARE, an Eastern State of the United States, has an area of 2050 square miles. Delaware is one of the original thirteen States. The capital is Dover. *Agriculture*.—The following shows the production and value of the principal crops for 1900: Corn, 5,010,312 bushels, \$1,903,919; wheat, 1,479,139, \$1,035,397; oats,

332,724 bushels, \$99,817; potatoes, 256,512 bushels, \$153,907; and hay, 44,441 tons, \$619,952. The Bulletin of the National Association of Wool Manufacturers estimated the wool product as follows: Number of sheep, 12,239; wool, washed and unwashed, 61,195 pounds; scoured wool, 33,046 pounds.

Manufactures.—In 1899 there were 47 cigar factories, which produced during the calendar year 4,938,296 cigars. The number of grain and fruit distilleries in operation during the fiscal year ending June 30, 1900, was 30. The production of apple brandy was 13,982 gallons, and distilled spirits gauged amounted to 1750 gallons. Delaware ranked fourth among the States as a producer of granite in 1899, the output being valued at \$1,039,349.

Commerce.—The imports of merchandise during the fiscal year ended June 30, 1900, aggregated in value \$319,054, and the exports, \$5,679,735, making the total foreign trade \$5,998,789. The number and tonnage of the vessels entered and cleared at the various ports was: Entered, 90, of 165,378 tons, cleared, 82, of 155,277 tons.

Banks.—On October 31, 1900, the total number of national banks organized was 20—all in operation. The active capital aggregated \$2,158,985; circulation, \$877,012; deposits September 5, 1900, \$6,397,179; and reserve, \$2,324,418. The State banks June 30, 1900, numbered 2, and had capital, \$600,000; deposits, \$1,685,302; and resources, \$2,989,643; loan and trust companies, 2, with capital, \$1,000,000; deposits, \$3,323,140; and resources, \$4,750,077; and mutual savings banks, 2, with depositors, 20,300; deposits, \$5,027,395; and resources, \$5,806,106.

Education.—In 1899 there were 13 public high schools, with 42 teachers and 1087 students; 2 private secondary schools, with 15 teachers and 220 students; and 1 public normal school, with 2 female teachers and 25 female students. Two colleges for men and for both sexes reported 20 professors and instructors, 132 students, and a total income of \$49,171.

Finances.—At the close of 1900 the assets of the State amounted to \$1,118,509; liabilities, \$769,750; excess of assets over liabilities, \$348,759.

National Guard.—The National Guard of Delaware consists of 449 infantry, and the total number authorized is 750. There is no cavalry or artillery. The total number in the State liable to military service is 29,000. The State appropriation for military purposes is \$5000.

Population.—According to the United States census, the population in 1890 was 168,493; in 1900, 184,735; increase for the decade, 16,242, or 9.6 per cent. The largest city is Wilmington, with a population in 1900 of 76,508; and Newcastle ranks second, with a population of 3380.

Politics.—The struggle of Mr. J. Edward Addicks to obtain from Delaware a United States senatorship was continued throughout the year. The initial step of this struggle began with Mr. Addicks's advent in Dover in 1889. In that year some factional differences in the Republican party appeared, of which Mr. Addicks took prompt advantage; he succored the snubbed politicians of the lower counties, pressed for more equitable assessment and registration laws, and in other ways proved himself invaluable. Having thus made straight his way, Mr. Addicks began his active canvass for a senatorship in 1895. In that year the State Legislature was Republican, and there was a vacancy to be filled at Washington. Mr. Addicks was strong enough to prevent the election of any one opposed to him, but not strong enough to get himself elected; so no one was elected. By this time the Republican party was so well divided into hostile factions that a quarrel ensued when the State convention met to appoint delegates to the national convention of 1896, and as a result two sets of delegates were sent to St. Louis. The Republican national committee on credentials decided against the Addicks delegates and in favor of the Du Pont-Higgins delegates, and the party whom the latter represented were henceforth known as regular Republicans, while the others were called Union Republicans. In 1897 the Legislature was Democratic, and Mr. Kenney was elected to fill out the unexpired term left vacant by the previous Republican Legislature. In 1899 the Republicans regained control of the Legislature; also there was a senator to elect, because the term of the other Democratic senator, Mr. George Gray, had expired. But again the cry of "Addicks or nobody" was raised; and, as before, no one in the three-cornered fight was strong enough to win alone. Delaware was, therefore, a second time left unrepresented. When the Republican National Convention met in June, 1900, another double set of delegates from Delaware presented themselves. In the argument made on behalf of the Addicks delegates before the committee on credentials, it was asserted that out of the total Republican vote in Delaware, amounting to, perhaps, 22,500, Addicks could control 14,000 votes, while the Du Pont men could hold only 6500. If Addicks, then, were given regular standing by the convention, he might be relied upon to carry the State for the Republicans in the fall elections. After the hearing the committee proposed to the Du Pont men that a compromise be made and that half of each set of delegates be seated. When the Du Pont men refused to accept this compromise, the committee decided on the

political merits of the case in favor of the Addicks men. Mr. Addicks, being given control of the party machinery in his State, proceeded to make a diligent canvass with the view of electing himself to the Senate. And the Du Pont men said, as they have said now for six years, that with Mr. Addicks money was no object. The election, however, was a disappointment to Mr. Addicks. The so-called lower election counties, which had previously been strong for Mr. Addicks, gave him only one-half of their votes. The governor elected, however, is favorable to Mr. Addicks, and his chances are thus increased. The Legislature, which meets in January, 1901, will consist of 9 Republicans and 8 Democrats in the Senate, and 20 Republicans and 15 Democrats in the House. The Republicans will thus have a majority of 6 on a joint ballot. It is known, however, that at least 7 of the Republicans elected are pledged against voting for Mr. Addicks. If these men hold firm, as they have done before, Delaware's total representation in Congress will be one man in the House of Representatives. For on March 4, 1901, there will otherwise be two vacant senatorships from Delaware. The administration, the influence of whose opinion, backed by federal patronage, might be of decisive power in determining the result, has, it is said, maintained a neutral attitude during the year. Post-offices and other minor appointments have been impartially distributed to both factions, and no intimidation has been given to either side which could be used for political effect. In commenting upon Mr. Addicks's senatorial persistency, a portion of the press has taken the view that since before Mr. Addicks's activity Delaware was uniformly Democratic, but is now, through his efforts, a Republican State, there is no reason why he should not be elected. On the other hand, it is said that every honest man must wish Delaware to be politically purified, and that this can never be done until Mr. Addicks's political aspirations are disposed of.

Elections.—In the State election of 1900 John Hann, the Republican nominee for governor, received 22,421 votes; and Peter J. Ford, the Democratic nominee, 18,808. W. O. Hoffercker, Republican, was elected to fill out the unexpired term (56th Congress) of J. H. Hoffercker; and L. H. Ball was elected as the congressional representative of Delaware for the 57th Congress. The State Legislature, as a result of the elections, will have a smaller Republican majority in 1901 than it had in 1899; though the Senate, which was then Democratic by one vote, will at the next session be Republican by one vote. In 1899 the Legislature consisted in the Senate of 9 Democrats and 8 Republicans, and in the House of 12 Democrats and 23 Republicans. In 1901 there will be 9 Republicans and 8 Democrats in the Senate and 15 Democrats and 30 Republicans in the House.

State Officers and National Representatives.—State officers for 1900: Executive—governor, Ebe W. Tunnell; secretary of state, James H. Hughes; treasurer, L. H. Ball; commissioner of insurance, Edward Fowler; attorney-general, Robert C. White; auditor, J. H. Lingo; adjutant-general, Garret J. Hart—all Democrats, except Ball and Lingo (Rep.).

Judiciary.—Supreme Court: Chancellor, John R. Nicholson (Dem.); chief justice, Charles B. Love (Dem.); associate justices, Ignatius C. Grubb (Dem.), W. C. Spruance (Rep.), James Pennewill (Rep.), William H. Boyce (Dem.); clerk, William Virdin (Dem.).

Congressional representative for 1900 (56th Congress): John H. Hoffercker (Rep.). Senators for 1900 (56th Congress): Richard R. Kenney (until 1901), Democrat from Dover; other vacant.

State officers for 1901: Executive—governor, John Hunn; lieutenant-governor, P. L. Cannon; treasurer, Martin B. Burris; auditor, J. B. Norman; attorney-general, H. H. Ward; commissioner of insurance, G. W. Marshall.

Judiciary: Same as in 1900.

Congressional representative for 1901 (57th Congress): L. H. Ball (Rep.), from Faulkland.

Senators for 1901 (57th Congress): Both vacant.

DEL PUENTE, GIUSEPPE, famous operatic baritone and teacher of singing, died at his home in Philadelphia, Penn., on May 25, 1900. He was born of Spanish descent at Naples, Italy, in February, 1845, and inherited the title Marquis di Murcia. At first he studied violoncello playing at the Naples Conservatory, and later received vocal instruction from the celebrated teachers Scafate and Guercia, but interrupted his training to serve in Garibaldi's army, where he reached the rank of sergeant. After singing in Russia for some years without any particular success, he made his operatic debut at Jassy, in Moldavia, with Campanini as the tenor of the same company. Soon afterward Del Puente became quite famous, and sang at most of the courts and principal opera houses of Europe. In 1873 he came to the United States, where he became a great favorite, sharing operatic triumphs with Nilsson, Campanini, Patti, and Scalchi. Possessing a beautiful voice, excellent method, and fine stage presence, he excelled in parts requiring vigor and dash, as, e.g., Don Giovanni and Toreador (in *Carmen*), in which he was particularly famous. In addition to an

operatic repertoire of more than sixty operas he did a great deal of work on the concert platform. During the last seven or eight years of his life he was engaged in giving vocal instruction in Philadelphia, his last appearance at the New York Metropolitan Opera House being as Don Giovanni instead of Maurel, in 1895-6.

DEMOCRATIC CLUBS, NATIONAL ASSOCIATION OF, organized in 1888, has a membership of about 750,000. President, William R. Hearst, New York; secretary, Max F. Ihmsen, 1370 Broadway, New York.

DENMARK, the smallest of the three Scandinavian kingdoms, embraces the peninsula of Jutland and a number of adjacent islands in the Baltic, of which the largest are Funen, Zealand, Laaland, and Bornholm. Its area, including the Farøe Islands, is 15,289 square miles. The official census that should have taken place in 1900 was postponed till 1901, but a careful estimate of the Bureau of Statistics places the population in February, 1900, at 2,400,000. The largest towns are Copenhagen, the capital, with a population in 1895 of 333,714, excluding the suburbs; and, including the suburbs, 375,000 (1890); Aarhus, 33,308 (1890); Odense, 30,277; Aalborg, 19,503; Horsens, 17,290; Randers, 16,617. The State religion is Lutheranism, the most numerous dissentients being Jews and Catholics, each about 4000 in number. Elementary education is compulsory between the ages of 7 and 14, and the number of pupils attending the primary schools is about 310,000. There are 197 high schools of different character—classical, scientific, commercial, and technical. The University of Copenhagen has about 1600 students registered under the non-professional faculties.

Agriculture.—Agriculture is by far the leading occupation, and cattle raising and dairy farming are of the highest importance. The soil is greatly subdivided, and the government is very favorably inclined to the system of peasant proprietorship. In 1899 a law provided that artisans possessing 400 kronor who wished to purchase land for purposes of cultivation should receive from the government a loan of 3600 kronor on very easy terms; and as an indication that many were expecting to avail themselves of this opportunity, it was further provided that such loans should not exceed 2,000,000 kronor (kronor equals 26.8 cents) per annum. In 1898 the value of the cereal and hay crops was estimated at 328,000,000 kronor. In 1899 the crops were: Wheat, 3,517,288 bushels; barley, 20,881,611 bushels; rye, 17,671,033 bushels; oats, 35,685,611 bushels; sugar beets, 48,042,914 bushels. The cereals raised are not sufficient for home consumption, and large amounts of grain are imported every year. In 1898 there were 449,264 horses in the country, 1,743,440 cattle, 1,074,443 sheep, and 1,178,514 swine.

Commerce and Transportation.—The chief imports are grain, flour and other foodstuffs, fodder, small manufactured articles, wooden manufactures, metals, and coal. The exports are almost exclusively foodstuffs, nearly 90 per cent. comprising live animals, meat, butter, eggs, and fruit. In 1898 the total imports amounted to 462,000,000 kronor, and the exports to 326,000,000 kronor. In 1899 the special imports were valued at 404,100,000 kronor, and the exports at 272,500,000 kronor. The exports of Denmark to the United States amounted to \$211,877 for the fiscal year ending June, 1898; \$280,198 in 1899; \$920,455 in 1900. The imports from the United States in 1898 were \$12,697,421; in 1899, \$16,605,828; in 1900, \$18,487,991. Manufactures are in a very thriving condition, but as yet insufficiently developed to supply the home market. The merchant marine has shared in the wonderful development experienced by all the countries of northern Europe. Within the last five years the tonnage has doubled, the increase in 1899 being 23.5 per cent. in the case of steamships. In 1899 the merchant navy consisted of 3020 sailing vessels of 158,155 tons, and 476 steamships of 223,134 tons. The port of Aarhus is being greatly improved and increased at considerable expense. In 1899 there were 1568 miles of railway, of which 1107 miles were owned by the state.

Finance.—Revenue is chiefly raised from customs, direct taxes, stamps, and excise. The greatest objects of expenditure are the army, the fleet, and the national debt. The budget for 1898-99 showed an income of 71,200,000 kronor and an expenditure of 74,400,000 kronor; in 1899-1900 the income was 67,200,000 kronor, and the expenditures were 69,494,000 kronor.

Army and Navy.—Military duty is obligatory on all citizens above the age of 22. The terms of service are 8 years with the colors and 8 years in the reserve. The standing army numbers about 8900 men, and the war footing is estimated at 60,000. The navy, intended for coast defence, comprises 5 armored battle-ships, ranging from 2150 to 3470 tons; 6 protected cruisers, 7 gunboats, and 34 torpedo boats. Among the five armor-clads are the *Hewlf Nolle*, launched in 1899, and a sister ship now under construction.

Government.—Denmark is a constitutional monarchy with the legislative power vested in a bicameral Diet, the *Rigsdag*. The Upper House, the *Landsting*, is composed of 12 life members appointed by the crown, and 54 members elected for

eight years by certain electoral bodies. The Lower House, or *Folkething*, is composed of 114 members, elected for three years by universal suffrage. The reigning king is Christian IX.

HISTORY.

The parliamentary history of 1900 is the record of a struggle between the crown and cabinet on one side and the Opposition in the *Folkething*, or Chamber of Deputies, on the other; and though the social forces at work in Denmark influenced in a measure the position of parties in the *Rigsdag*, the great source of contention was the question whether or not the ministry should be made responsible to the popular house of the national Diet. Parliamentaryism is not fully developed in Denmark; and even if the king may be forced to dismiss a minister or a ministry whom the legislature will not endure, it does not necessarily follow that he must form a ministry from the leaders of the majority or even appoint such as are entirely acceptable to that majority. In fact, for nearly thirty years the cabinet has invariably consisted of men of the Right, though the *Folkething* for a number of years has been overwhelmingly Left. That the *Landsting*, or Senate, is conservative, and is willing to join hands against the Radicals and Socialists in the lower chamber, acts, of course, in favor of the crown. But since all financial measures, according to the constitution, must originate in the *Folkething*, the wisest ministers have taken care not to antagonize it, and by mediating between the Deputies and the Senate have carried on the affairs of the state. In 1900, however, the policy of conciliation became impracticable; the bitter strike of the preceding year had strengthened the Socialists and made the Radicals bolder; and the consciousness of the class struggle made party lines sharp and rigid. On the question of the annual budget and financial reform the Senate and the *Folkething* clashed. The Hoerring ministry had formulated an elaborate scheme of fiscal legislation, and different features in its programme were intended to please the different parties. The presence of Bramsen in the cabinet, with his leaning toward socialism, tended to make the general character of the innovation very liberal. It was proposed, in the first place, to distribute a large part of the state's revenue from the land tax among the communes; a measure which appealed greatly to the peasant proprietors, who constitute a very considerable fraction of the Left. To counterbalance the decrease in revenue so created a tax on fortunes and incomes was devised; by the terms of this bill the fortunes of private persons and the capitals of societies domiciled in Denmark, with the exception of charitable corporations, were to be taxed three-hundredths of 1 per cent.; and $1\frac{1}{4}$ per cent. was to be levied on all incomes above 700 kronor in Copenhagen, above 600 kronor in other towns, above 500 kronor in the rural districts. The Socialists especially received this proposal with delight. The free-traders, who are very strong in the ranks of the Opposition, were to be won over by a reduction in the customs; but this proved very distasteful to the agrarian element in the Senate. Lastly, a tax on alcohol was suggested; and this the Conservatives received with satisfaction, because they argue that drunkenness is one of the chief causes of idleness, poverty, crime, and strikes in Denmark. The Left, on the contrary, vehemently objected to the proposed tax, for they regarded it as an infringement on the personal liberty of the poor man, and feared for the effect of such a law on their electors. This conglomerate programme, therefore, came to grief, its liberal provisions being embraced by the popular party, while its conservative side was rejected. The budget, too, had to suffer; the ministry was specially anxious for generous military and naval appropriations, and the *Folkething*, consequently, proceeded to cut down the estimates. On March 22, when all progress was despaired of, Hoerring announced that with the close of the session the ministry would resign, owing to the deadlock between the popular chamber and the Senate. On April 27 the king accepted the resignation of Hoerring, and named a new ministry, again, however, from members of the Right. Schested was made premier and minister of foreign affairs; Goos, minister of justice; Rysensteen, of public works; Frijs, of agriculture; Scharling, of finance; Middelboc, of navy; Bjerre, of worship. Schnack, who had the war department, and Bramsen, the interior, in Hoerring's cabinet retained their positions. The new cabinet presented merely a change in personality, and not in policy, enjoying the support of the *Landsting*, but opposed by the *Folkething*. The Left was greatly disappointed that the king had not chosen his ministers from among them, but the king took this action because of their alliance with the Socialists. The Schested ministry adopted a new system of tactics. It abandoned the attitude of conciliation, and with the aid of the Senate openly attacked the *Folkething*. The budget committee of the *Folkething*, by its power over finance, is the virtual ruler of the country and should not have been defied; but a member of the cabinet declared that if supplies were refused and legislation blocked, the ministry would still persist in office and content itself with the performance of details of administration. The Opposition grew bitter, attacked the ministers individually and the ministry as a whole; but the

latter found the Senate behind them, and remained firm. Finally, a compromise was effected and a commission appointed to formulate a scheme of tax reform. In September the commission presented a report agreed to by all but the Socialist members, recommending all the features of the ministerial programme, except the tax on alcohol. Though the Conservatives declared themselves satisfied, and the *Folkething* adopted the project unanimously, the cabinet refused to accept the measure and introduced one of their own, containing the duty on alcohol, on which they laid so much stress. The Left rejected the ministerial plans, and even the Conservatives in the Senate became disgusted with the rigid obstinacy of the ministry. Late in the year nine senators of the Right seceded, declaring for the programme reported by the commission and adopted by the *Folkething*, and asserting that the attitude of the cabinet was killing all chances of reform. At the beginning of December party politics were in confusion. The Right was fast going to pieces; the Left continued aggressive, but the king showed his determination to stand by the ministry to the last. On December 5 a commission was appointed to consider the government's fiscal plans. The fact that the Right obtained a majority of only one on the committee showed that the stronghold of Conservatism, the Senate, was going over to the Opposition; and eminent Conservative leaders did not fail to warn the minister of the results of their conduct. The year closed with a tottering ministry, a growing Radical opposition, and great dissensions in the state of Denmark. The most important subjects of debate, aside from the great question of parliamentary supremacy, were bills regulating the hours of labor for children and women, providing for adequate factory inspection, and giving to tribunals of arbitration the power to subpoena and examine witnesses as regular courts. Both measures were proposed by Bramsen. The *Folkething* also adopted measures for the establishment of a steamship line between Gedser and Warnemünde in Germany—an enterprise undertaken in conjunction with the duchy of Mecklenburg, and destined to develop the commerce of the country. The question of the sale of the Danish West Indies to the United States stirred up much excitement in Denmark in 1900. A great wave of patriotism swept over the country, and the leading men in politics, literature, and commerce spoke out strongly against the transaction. For the colonies of Denmark, see COLONIES; ICELAND; GREENLAND; DANISH WEST INDIES.

DENTAL ASSOCIATION, NATIONAL, formed 1897, is composed of delegates, permanent members, and honorary members, and has an active membership of about 500. General meeting for 1901, Milwaukee, Wis., August 13-16. President, G. V. Black, Jacksonville, Ill.; corresponding secretary, Mary E. Gallup, 711 Boylston Street, Boston, Mass.

DEPARTMENT STORES. See POLITICAL AND SOCIAL SCIENCE, AMERICAN ACADEMY OF.

DERMATOLOGICAL ASSOCIATION, AMERICAN, organized in 1876, had 43 members in 1900. Next annual meeting, Chicago, Ill., May 30-June 1, 1901. President, Francis J. Shepperd, Montreal, Canada; secretary, Frank Hugh Montgomery, 100 State Street, Chicago.

DÉROULEDE, PAUL. See FRANCE.

DESCHAMPS, GASTON, the French *littérateur* and critic, was born at Melle, department of Deux-Sèvres, in 1861. He studied at the École Normale, Paris, and the École Française of Athens; joined the staff of the *Journal des Débats*; and in 1893 succeeded Anatole France as literary critic of *Le Temps*. His publications include *La Grèce d'Aujourd'hui* (1892, crowned by the Academy); *Sur les Routes d'Asie* (1894); *La Vie et les Livres* (1894-97), collections of the *Temps* articles; and *Le Malaise de la Démocratie* (1899). M. Deschamps is announced to follow M.M. Brunetière, Doumic, Rod, and Regnier as lecturer before the French Circle of Harvard University, and will deliver a series of lectures throughout the United States.

DESIGN, NATIONAL ACADEMY OF, founded 1826, in 1901 had 92 academicians and 62 associate members. The academy maintains a free art school, besides classes in etching, medal designing, and die cutting. It has a library of works on art, and holds an annual exhibition of painting and sculpture. In 1899 the school was moved to a temporary building on the new site, corner Amsterdam Avenue and One Hundred and Ninth Street. President, Frederick Dielman; secretary, Harry W. Watrous, 58 West Fifty-seventh Street, New York City.

DEVELOPMENT. See BIOLOGY and FISH AND FISHERIES.

DE WET, CHRISTIAN, the Boer general, has made himself famous during the last months of the year by his obstinate refusal to surrender to the British forces and his continued outwitting of Lord Kitchener and Lord Roberts. With his two thousand poorly equipped horsemen he repeatedly eluded and confused the British. Unlike General Cronje and General Botha, De Wet is a Boer of no education, and is as opposed to the English language as he is to the English race. He is about

40 years of age, and a native of Orange Free State, where he was until recently the manager of a prosperous farm near Bloemfontein. As a member of the *Volksraad* he made himself conspicuous by his abuse of the English. He was one of the members of his state who disobeyed President Brand's proclamation of neutrality, and joined the people of the Transvaal in the revolt against Britain in 1880. With Joubert he fought at Schanz's Hoogte and Laing's Neck, and he was one of the fifty who first volunteered to make the famous ascent of Majuba Hill. During the recent guerilla warfare General De Wet has proven a well-chosen leader, and in rapid manoeuvres with a small and mobile force has shown military skill of a high order.

DEWEY, GEORGE, for whom the title of admiral was revived, again became prominent in April, 1900, by announcing himself a candidate for the Presidency of the United States. The announcement was made to the *New York World*, which had persistently advocated the admiral's nomination since his return to the United States in the fall of 1899. At that time the admiral had scouted all notion that he would be a candidate; saying in effect that he was a sailor, not a statesman, and that only those who understood affairs should conduct them. In his statement in April, however, he said that the study which he had since given to the matter, and the many assurances that he had received that his nomination would be favorably regarded by the people, had sufficed to alter his opinion. And he concluded, as reported by the *World*, with the following sentence, which was quoted in all sections of the country: "Since studying the subject, I am convinced that the office of the President is not such a very difficult one to fill, his duties being mainly to execute the laws of Congress." The press generally characterized this statement as affording ample proof that the admiral was, as he had said, a sailor, not a statesman. In his announcement, as first made, Admiral Dewey did not seem inclined to attach himself to either political party, expecting apparently a nomination by the people in general on the platform of the Constitution and the Flag. Later, however, he stated that he was a Democrat. But the Democrats were at that time quite as fully committed to Mr. Bryan as the Republicans were to President McKinley. And it was generally felt that there was no room for a third candidate, even though there were otherwise no political objections to him. It was said that if the admiral had announced his candidature in 1899, before the various public receptions and parades accorded him had given full vent to the enthusiastic admiration of the people, he would have been a formidable candidate in either party. But not only had the shouting and tumult died away by April, 1900, but the admiral had apparently committed himself to a flat contradiction in his political opinions. For the report of the Philippine Commission, of which he was a member, made very short work of the alleged ability of the Filipinos to govern themselves; whereas the admiral had said personally that from observation of them he was convinced that they were more capable of self-government than the Cubans. This contradiction tended to alienate the Anti-Imperialists in the Democratic party, who alone would have been naturally inclined to support him for the Presidency. The overwhelming political odds thus arrayed against the admiral, and the fact that he had declined in the first place to consider a nomination, lent color to the widely expressed opinion that he was over-persuaded by certain unwise advisers to announce himself as a candidate. Previous to his trip to the Northwest the admiral had hoped to carry the Democratic convention by taking advantage of the two-thirds rule. He stated, however, in a Washington interview of June 14 that he no longer considered himself a factor in the Presidential race.

DEWEY, JUSTIN, judge in the Massachusetts Superior Court, died at Springfield, Mass., March 16, 1900. He was born at Alford, Mass., in 1836, graduated at Williams College in 1858, and was admitted to the bar in 1860. He was elected to the lower house of the Massachusetts Legislature in 1862 and 1877 and to the State Senate in 1879. In 1886 Governor Robinson appointed him to the Superior Circuit Court.

DIALECT SOCIETY, AMERICAN, organized in 1889 to investigate dialects in the United States and Canada, has now a membership of 300. Publishes *Dialect Notes*. President, Professor George Hempl, University of Michigan, Ann Arbor, Mich.; secretary and treasurer, Professor O. F. Emerson, Western Reserve University, Cleveland, O.

DIDON, HENRI, a prominent French preacher and writer, died March 13, 1900. Born March 17, 1840, at Touvet (Isère), he studied at Grenoble Seminary, entered the Dominican Order, and completed his studies at Minerva College, Rome. In 1868 attention was attracted to his sermons at St. Germain des Prés, Paris, depicting democracy as a result of Christianity. After the Franco-Prussian War he became prior of the Dominicans at Paris, where he delivered lectures on the reconciliation of science and religion, and on divorce. His arguments did not meet the approval of the archbishop, and the head of the Dominicans banished him to a monastery in Corsica for a year and a half. After the expiration of this period he studied at the

universities of Berlin and Leipzig, his experiences there affording material for his *Les Allemands* (1884). A journey to Palestine resulted in his well-written and much-read *La vie de Jésus* (two vols., 1890). Soon afterward he was appointed director of the college Albert le Grand at Arcueil, and from 1891 to the time of his death he preached in the Paris pulpits.

DIET. See Food.

DIPHTHERIA. Besides the scattered cases of the disease usually seen during the autumn and winter, epidemics of diphtheria of varying severity occurred in Massachusetts in September, 1900, and in Michigan, Illinois, Indiana, and Wisconsin in October. An epidemic of the disease visited Edinburgh, Scotland, in June, and an outbreak of special severity was reported in Leicester, England, in October. It has been definitely decided during the past year that membranous angina may be caused by *streptococcus pyogenes*, by the *micrococcus of sputum septicamiae* and by *oidium albicans*, as well as by the Klebs-Löffler bacillus, the last only causing true diphtheria. Microscopic examination of a culture can alone decide the matter. The physical disturbances caused by the streptococcus and the micrococcus mentioned may produce death. See SERUM THERAPY.

DISCIPLES OF CHRIST, CAMPBELLITES or CAMPBELLITE BAPTISTS. This religious sect, strongest in western and southwestern United States, has enjoyed a notable growth since organization in 1827, its gain in membership during the past decade alone amounting to nearly one-third. Reports for 1900 assign to the Disciples 1,149,982 members, 10,528 churches, with 6528 ministers. Of regular denominations, it is one of the most progressive in efforts directed toward sectarian education and church extension. As a result, its missionary work has been successful over a wide field and its colleges and seminaries are numerous and of considerable reputation. Congregational in church government, the Disciples make their particular aim the unity of all Christians by a restoration of ordinance and doctrine as outlined by the Apostles in the New Testament. The annual congress of the denomination, held at Indianapolis, March 27-29, gave notable attention to biblical and social problems, the two great topics of current interest. The national convention in October received reports of church work which indicated a period of progress; during the year an orphanage was opened at San Juan, Porto Rico; a new mountain mission in Kentucky was founded; and six additional missionaries were sent out. The American Missionary Society reported receipts of \$60,000, while the Foreign Board succeeded in raising over \$200,000. The convention of 1901 will meet at Minneapolis.

DISTRICT OF COLUMBIA. The District of Columbia is the seat of the government of the United States, and is coextensive with the city of Washington. It was formed March 30, 1791, by the cession of land by the States of Maryland and Virginia, and formerly comprised two counties—viz., Alexandria and Washington. Alexandria County was re-ceded to Virginia, July 9, 1846, and in 1874 the county government of Washington County was abolished. For the present form of government, see below. The total land area of the district is approximately 60 square miles. According to the United States census, the population in 1890 was 230,392, and in 1900, 278,718, an increase for the decade of 48,326, or 20.9 per cent.

Commerce.—During the fiscal year ended June 30, 1900, the imports of merchandise at the United States customs district, Georgetown, aggregated in value \$206,730, an increase in a year of \$14,316. There were no exports.

Banks.—On October 31, 1900, there were 12 national banks in operation and 7 in liquidation, and the combined active capital was \$3,027,000; circulation outstanding, \$1,471,705; deposits, \$18,446,523; and reserve held, \$5,939,205. The loan and trust companies, September 5, 1900, numbered 4, and had capital, \$4,148,750; deposits, \$10,719,937; and resources, \$16,047,722. There were also, June 30, 1900, 4 stock savings banks, with capital, \$220,000; depositors, 3360; deposits, \$421,313; and resources, \$1,132,017. The exchanges at the clearing house at Washington for the year ending September 30, 1900, aggregated \$131,528,901, a gain over the previous year of \$14,144,616.

Finances.—The total bonded debt of the city of Washington at the close of 1900 was \$15,000,000, and the total assessed valuation of taxable property was \$192,000,000. The value of real property of the United States in the city of Washington is nearly as great as the valuation of private property, and Congress appropriates approximately, as the general government's share of the municipal expenses, nearly as much as is derived from the tax on private property.

Education.—In 1899 the enrolment in the public schools was 45,560, and the average daily attendance, 34,032. There were 1159 teachers, 119 buildings used as school houses, and public school property valued at \$5,000,000. The total revenue for the year was \$1,148,850; total expenditure the same; expenditure for teachers' and superintendents' salaries, \$801,016. There were 5 public high schools, with 128

teachers and 3316 students; 19 private secondary schools, with 118 teachers and 737 students; 2 public normal schools, with 19 teachers and 170 students; and 2 private normal schools, with 8 female teachers and 43 female students. The 7 colleges reported 184 professors and instructors, 1281 students, and a total income of \$441,528. The professional schools comprised 4 theological schools, with 24 instructors and 167 students; 6 law schools, with 55 instructors and 695 students; and 4 medical schools, with 114 instructors and 445 students.

National Guard.—The National Guard of the District of Columbia consists of generals and staff, 14; artillery, 43; and infantry, 1213. The total number authorized is 3320. The total number liable to military service in the district is 50,000. The appropriation for military purposes is \$31,325.

Government.—By act of Congress approved June 11, 1878, the government of the District of Columbia is vested in three commissioners, two of whom are appointed by the President of the United States from citizens of the District having had three years' residence therein immediately preceding their appointment and confirmed by the Senate. The third commissioner is detailed by the President of the United States from the Corps of Engineers of the United States Army, and must have lineal rank senior to captain, or be a captain who has served at least fifteen years in the Corps of Engineers of the army. The commissioners appoint the subordinate officers of the government. The present commissioners are: H. B. F. Macfarland (Rep.), John W. Ross (Dem.), whose terms expire May 2, 1903; and Captain Lansing H. Beach (non-partisan), who holds office during the pleasure of the President. The secretary is William Tindall.

Municipal Utilities.—The total street mileage in Washington in 1900 was 279.32, of which 211.65 miles were improved. There were 370.09 miles of water mains; the daily capacity of the water system was 76,500,000 gallons; and the daily consumption of water, about 50,905,000 gallons, or 183 gallons per capita. The total length of the sewerage system was 405 miles. The following shows the appropriations to be used in defraying the expenses of the various municipal departments during the year to end June 30, 1901: Street cleaning, \$155,000; street lighting, \$241,000; police, \$644,140; fire department, \$306,220. The annual cost of the water-works system, exclusive of improvements, is about \$271,000.

Street Railways.—On July 1, 1900, the length of the underground conduit electric road was: Double track, 36.32 miles; single track, 6.77 miles; total, 43.09. Overhead electric road: Double track, 28.80 miles; single track, 2.07 miles; total, 30.87 miles; total mileage of all electric roads, 73.96.

Finances.—The total funded debt on June 30, 1900, was \$15,094,570. The assessed valuations of property were: Real estate, \$179,351,811; personal property, \$10,326,585; street railways (taxed on gross receipts), \$1,371,348; total, July 1, 1900, \$191,049,744.

DJEVAD, PASHA, former grand vizier of Turkey, who died August 10, 1900, first distinguished himself in the war between Russia and Turkey. After being in diplomatic service for a time he was promoted to the governorship of Crete, and from 1891 to 1895 was chief adviser of the sultan. He was the author of a military history of the Ottoman Empire.

DOMINICA, a West Indian island belonging to Great Britain, is the largest of the Leeward Islands (*q.v.*), and constitutes a presidency of that colony. Dominica, the loftiest of the Lesser Antilles, is about 29 miles long and 16 broad, and has an area of 291 square miles, of which nearly 30 per cent. is under cultivation. A large majority of the inhabitants, who number upward of 27,000, speak a French patois, but the use of English is increasing. The capital is Roseau (population about 4500), and the second town in importance is St. Joseph. The government is directed by an administrator (H. J. Hesketh-Bell in 1900) and a council of six official and six non-official members, all nominated by the governor of the colony. The public debt in 1899 was £70,900. Other statistics of finance and statistics of commerce are:

	Revenue.	Expenditure.	Imports.	Exports.
1897.....	£23,616	£24,061	£54,074	£47,416
1898.....	24,569	24,648	31,346	63,912
1899.....	26,156	25,945	70,000	70,000

The principal products are cacao, sugar, molasses, rum, coffee, lime-juice, fruit, spices, and cabinet woods. The aggregate entrances and clearances in foreign shipping in 1898 were 456,998 tons.

DOMINICAN REPUBLIC. See SANTO DOMINGO.

DORMIOL. A recent hypnotic in which increased interest has been taken in 1900 is dormiol. This is a compound of chloral with amylene-hydrate, occurring as a colorless liquid with an odor like that of menthol and a similar taste. Kétly, in

Therapie der Gegenwart, considers it excellent, reliable and cheap. Schultze, in *Neurol. Centralblatt*, states that it is an effective hypnotic in 75 per cent. of the cases in which he employs it, and claims that it is specially efficient in the sleeplessness of melancholia and hypochondria.

DOUKHOBORTSI, or the DOUKHOBORS, i.e., "Spirit-wrestlers," are a Russian religious sect of which nearly 8000 have settled in Manitoba, Canada, during the past two years. They originated in the middle of the eighteenth century, and were persecuted by the government, which finally came to the conclusion that harsh measures were ineffective. An imperial ukase of November 27, 1801, read as follows: . . . "It has been found both through reason and experience that intellectual errors of common people, while deepening in the people's minds through dispute and official admonishing, wear away and disappear only through oblivion, good example, and toleration. . . . The admonishings of the Doukhobors must by no means assume the form of investigation, contests, and violence against their open views (opinions), but must, by themselves and unnoticeably, proceed to them from the good morals of the clergy, from their life, their actions, and finally from non-compulsory conversations, suited to the occasion and appearing to be unintentional." In 1822 the dissenters were allowed to have houses of prayer, but Nicholas I. withdrew all the liberal measures. In 1883 houses of prayer were again sanctioned by law, but soon Pobyedonostseff's policy of religious intolerance was put into operation, and in 1894 the gatherings of the sect for prayer were forbidden. The immediate cause of all late persecutions of the Doukhobors is their refusal to serve in the army when a universal military service was introduced in 1887 in Transcaucasia, whither they had been banished years before. This they base on Christ's commandment: Love thy neighbor as thyself, and Christ, they argue, is above the Czar. After long tribulations their petition to the Czarina for a permission to emigrate was granted, and the first group of 1126 settled in Cyprus, August 26, 1898, as the nearest point to Transcaucasia, where they were confined by the Russian government. The other parties of Doukhobors, accompanied by Sergius Tolstoy (Leo Tolstoy's son) and Leopold Sulerzhitski, landed in Halifax, and were thence transported by the Canadian Pacific Railway Company to Manitoba. The money for the emigration was made up of the \$22,000 belonging to the Doukhoborts, \$15,000 contributed by Tolstoy from the sale of his new publications, and \$17,500 raised by English societies interested in the case of the persecuted. The *per capita* expenses for the journey from Russia to the place of settlement amounted to about \$50. The Canadian government gave the regular bonus of \$5 for each immigrant and \$1.50 for the expenses of settlement. The immigration halls in Manitoba were courteously thrown open by the government for use by the immigrants until houses were built. Parcels of land—about 160 acres—were given to each family, and the settlers at once set to tilling the land. Unfortunately, the staple supplies they had brought did not last them until the new crops could be gathered, and general want and need, with the occasional concomitant in the shape of scurvy, were the result. To save themselves from actual starvation most of them were obliged to become laborers on the railroads and elsewhere. Suffering from the intense cold, as they had not sufficient clothing, they worked through the winter, often having to wait for over two months for their pay, and yet they never were heard complaining. They are total abstainers, they do not smoke, and lead a life of puritan simplicity. Their vegetarian beliefs and strong objections to the slaughter of animals are in the way of cattle-raising, which is very profitable in that part of Canada, and thus they deny themselves an immediate and sure means of livelihood. Arthur St. John, late captain in the British army, who was won over to their cause by Tolstoy's propaganda, speaks of them in the highest terms after living with them for a considerable time. In spite of all the hardships they do not lose their temper, and are always cheerful, not infrequently passing jokes about the hardships of the previous day or the fruitless efforts to find some employment. Recognizing in religious matters no authority but Christ, they have no priests, and their prayers are handed down by oral tradition from fathers to sons. They would be of little avail even though printed, as only about 5 per cent. of them can read or write. Their rituals are quite numerous, but their chief concern is living according to Christ's precepts, and that they put above all formal religion. They are very anxious for the elementary education of the young, but they display in this a practical spirit: they want along with it instruction in farming and manual work, as accomplishments of immediate necessity in their new surroundings. In their social life they cling to the communal system of the Russian village, the so-called "mir," although some individual members do not always live up to its traditions.

DRAMA IN 1900. *American and English.*—The year was remarkable for several noteworthy Shakespearian revivals and for the hasty putting together of plays founded on popular novels to meet the present strong demand in that direction.

Among the former, *Henry V.* and *Hamlet* were produced under circumstances unusually successful from both a popular and an artistic point of view. The dramatizations of widely circulating novels were all failures from a standpoint even of very moderate permanence. *Sapho*, by Clyde Fitch, an American dramatist, who has done some good things, is one of the better examples of the dramatization class. It is founded on Daudet's novel and play, and although it deserves mention in comparison with the unspeakably bad average of dramatized novels, yet it is essentially a vulgarization of Daudet's idea. That some of these fundamentally flimsy dramatizations have, nevertheless, some dramatic value, such as *Little Nell and the Marchioness* (from Dickens's *Old Curiosity Shop*) and *David Harum*, is due to the excellent character of the material furnished the playwrights. The most important new play by an American author is *Sag Harbor*, by James A. Herne, although it is not so consistently good as *Margaret Fleming*, *Shore Acres*, and the *Reverend Griffith Davenport*, former plays by Mr. Herne. *Sag Harbor*, like the other plays of the author, is excellent in the faithful delineation of some types of American character, in the literary and unhackneyed dialogue, and in the freshness and unconventional quality of the dramatic action; in the comedy part it is most original, but the serious story is comparatively conventional and sentimental. Two new plays by Augustus Thomas, whom Americans have learned to regard as one of their most skilful and characteristic playwrights, hardly came up to the best quality of their author. *Oliver Goldsmith* is hardly more than a series of scenes and epigrams, mainly furnished by history and held together by a conventional love story. *Arizona* is a fairly well-constructed melodrama with a superficial treatment of the "local color" of army life and Arizona characters. David Belasco dramatized *Madame Butterfly*, a pathetic little story of Japanese life, by J. L. Long. Several plays on the subject of Nell Gwyn were produced in 1900. The most spontaneous and witty of these is *Mistress Nell*, by George C. Hazleton. English authors were more productive of good plays than their American contemporaries. Henry Arthur Jones, in *Mrs. Dane's Defence*, did by far the strongest work of the year. The play was produced in America as well as in England, and the opinion seems to be universal that the third act has not been equalled, for genuine dramatic power, in English drama for many years. Mrs. Dane, who is a woman with a past, tries to take her place as a good woman in society, and is in love with a young fellow who believes her to be what she represents. The first two acts show her trying to maintain her position, in spite of the rumors which begin to be whispered about. By one device after another she succeeds in warding off the quick-coming dangers. In the great third act a famous lawyer, the guardian of the man Mrs. Dane desires to marry, in trying to look up the facts of Mrs. Dane's life for the purpose of defending her against what he deems slanders, questions her closely, and step by step the lies she is forced to tell drag her secret from her. The fourth act is a rather more than usually conventional and meaningless case of pandering to the popular demand for an "agreeable" ending. Mrs. Dane, indeed, is inexorably sent off, but "compensation" for her loss is introduced in the shape of a meaningless young girl. *When We Were Twenty-one*, by a very promising young English dramatist, Henry Esmond, was produced in America, and was by far the best comedy of the year. By the discerning it is ranked ahead of *The Tyranny of Tears* and the equal of *The Little Minister*. The wit is of the human rather than the smart order, and springs from the characters and the situation, and is mellow and mature. Four middle-aged men try to prevent their young friend from marrying a rather disreputable actress with whom he is sincerely in love. They talk to him kindly with all the humor and wisdom of experience, but the young fellow can see no meaning in the mature point of view. They, however, do not intend to let him ruin himself, and one of them buys the name of the actress for a month; and when the boy sees the true situation he is disillusioned and penitent. Israel Zangwill's one-act play, *The Moment of Death*, is a little flash of effective drama and literature. It is snowing in a London street, and the duchess, coming from the church which was built in charity by the duke, who is dead, is about to go home in her carriage. The bishop attends her, and they talk of sin, the bishop remarking that God is responsible for our good deeds and we ourselves responsible for our evil deeds. The duchess sinks to the ground with a low groan. The stage becomes dark, and when it is again lightened a young married woman is discovered in Never-Never Land. Her lover comes to take her away, but is surprised by the husband. Agreeing that one should die, they toss up for the first shot, and the lover wins and misses. It is the husband's turn, but before he is to shoot he allows the lover to read the papers from England by which the latter learns that he is a duke through the death of a relative. The husband gets ready to fire, when his wife shoots him and runs away with the lover. The stage is again darkened, and the servant and bishop are seen bending over the figure of the dying duchess. *The Wedding Guest*, by J. M. Barrie, is not the equal of the author's former play, *The Little Minister*. The material is an episode too slight for a play. The treatment,

however, is interesting because of the wit and imagination and delicacy of character drawing which is characteristic of Mr. Barrie. Like many other English plays of the year, *The Wedding Guest* is founded on the consequences of a man's past. A young wife is brought face to face with her husband's former mistress. She is one who demands absolute purity from the man she is to marry, and the mistress is a woman who cannot be bought off. There is, therefore, trouble; but ultimately the mistress goes away with her child and gives the wife an opportunity to become reconciled with her husband. *The Lackey's Carnival*, by Henry Arthur Jones, did not have the success with people and critics which attended the production of *Mrs. Dane's Defence*. A lackey, who passes himself off as a gentleman, manages to compromise a lady, and afterward, when she is about to marry, attempts to blackmail her. He is frustrated in his design by the treachery of an accomplice. *A Debt of Honor*, by Sydney Grundy, is another play founded on the "man with a past" idea. A man about to marry tries, as a preliminary measure, to get rid of the mistress who has been the companion of his early struggles. The play results in her suicide. In the course of the action there is the kind of incidental social satire of "respectable" types, the tendency to which is marked in Grundy's recent plays. *Ib and Little Christina*, by Basil Hood, is a pretty one-act play, founded on an Andersen fairy tale. Ib is deserted by Little Christina, whom he has loved to the point of worship. She leaves him in solitude to follow a rich suitor. Years after another Little Christina, with the graces of the first, whose orphan child she is, comes to gladden the life of the faithful Ib. *Lady Huntworth's Experiment*, by R. C. Carton, is another example of the unreal, "smart" comedy of society with which the author is becoming identified. It is the story of a divorced woman, who goes into service as a cook, and in that position has many amorous adventures. Far superior to Carton in artificial wit is George Bernard Shaw, whose play, *You Never Can Tell*, was published in book form several years ago, but was produced on the stage this year for the first time. Shaw carries intellectual refinement to a point where it can hardly be popularly appreciated, at least in a theatrical form. *Herod*, by Stephen Phillips, a poetical tragedy, was given an elaborate production in England, and made a strong impression. The story of the king who, under a misapprehension, poisons his favorite wife and then goes mad is certainly good tragic material. *Mr. and Mrs. Daventry*, by Frank Harris, is the most extreme example of the numerous sexual plays of the year, and is remarkable for this fact, and not for dramatic or literary excellence.

Drama in Germany.—The most important German play produced during the year is *Johannesfeuer*, by Hermann Sudermann. In this eminent dramatist's former plays there is always an underlying idea, either social or vaguely philosophical. *Johannesfeuer* is probably no exception, although superficially it seems more like the conventional drama of incident. The idea in this case seems to be that good and evil is dependent upon accident, and the idea is consistently developed through a series of incidents which seem accidental enough. George, son of a suicide, is brought up by his uncle, as is also Marikka, daughter of a beggar woman. George is engaged to his uncle's daughter, Gertrude, but is attracted by Marikka, whose situation is so similar to his own. Marikka thinks George wants merely to seduce her, and repulses him. She happens, however, to find one of his poems, by which she learns of his genuine love. They are both devoted to duty, however, and think it wrong to love against the wishes of their benefactor. In a talk with his uncle George discovers that his father was dishonest, and Marikka discovers in a conversation with her mother that her father was a thief. This brings the two young people still nearer together. On *Johannesnacht* they are together alone in the house by accident; suddenly they hear a noise in the garden, and Marikka catches her mother about to commit another theft. George then marries Gertrude, and Marikka determines to go away. This last step also is brought about by an accident, for George is about to tell his uncle that he is determined to marry Marikka when the latter's mother is carried on to the scene by a gendarme for another theft. Gerhart Hauptmann's new play is very slight dramatically, but, like all of his plays, has imagination, beauty, and poetry. This fantastic fairy tale proved almost a failure on the stage. *Schluck und Jau* is founded on the story in the *Thousand and One Nights* about the poor wretch who is deceived into thinking he is a prince. In Hauptmann's play Schluck and Jau are companions, and Schluck is persuaded to take the part of the prince's wife. In the characters of the two vagabonds the transmuting power of the poet is revealed. Gerhart Hauptmann's *Michael Kramer* seems to have been a theatrical failure; although, as is always the case with his plays, there is in this piece a strong, poetical idea. An artist, full of high ideals, which he has not the talent to realize, has a son more gifted than he, for whom he expects great things in art. Early in life the son does work which shows the greatest promise. But, perhaps owing to his father's lifelong devotion to art and consequent neglect of the body, the boy is ugly, almost deformed. This makes him shy and retiring. He falls in love with the daughter

of a hotel-keeper, but is afraid to acknowledge it. The love of life of the young artist, checked by his deformity, is expressed in dissipation. He and his father drift away from one another. Finally, the boy, realizing that his life's ideals are impossible, kills himself, and the father mourns over the dead boy, more gifted than he, but lacking moral courage. *Das Tausendjährige Reich*, by Max Halbe, is another of the strange failures which have been successively written by the author of *Die Jugend*. As a German critic put it, Halbe has the gift of invoking spirits which he cannot control. The fresh talent which is found in *Die Jugend* is again obvious in the first two acts of *Das Tausendjährige Reich*. In the year 1848 there lived a village smith—a mystic, man of iron, and zealot at once, who, believing superstitiously in the portents which indicate the unfaithfulness of his wife, drives her to an undeserved death. In the third act the smith melodramatically calls God to witness that his dead wife was guilty, and at that moment his smithy is destroyed by lightning. In the fourth act the smith is about to join forces with Satan when God strikes him again by bringing about the ruin of his daughter. *Die Tochter des Erasmus* is another of the distinctively national and patriotic dramas of Ernst von Wildenbruch. Luther is a captive, and is about to be killed when Ulrich von Hutten arrives and knocks down the guard. A girl, devoted to Ulrich, follows him to banishment and danger. The note of the play is romantic and sentimental in a genuinely German way. It is full of enthusiasm for Luther's teachings, for mother's love and heroes' deeds, for sacrifice and devotion. Max Dreyer's *Probekandidat* was one of the great popular successes of the year. A young teacher up to date in modern ideas of science is forced either to give up his position or retract his statement to the students that the earth moves. His mother is dependent upon him, and the girl he loves cannot safely marry a "heretic," on account of the position of her father. He yields to pressure, and is about to retract; but when he is face to face with the young students he is unable to go back on his scientific conviction, and in a dramatic scene reiterates his heterodox notions. He loses his place and goes away to make his fortune elsewhere. Another popular play was *Rosenmontag*, by Otto Erich Hartleben. Its theatrical skill is rather specious and its sentimentality is of the trite, conventional kind. The best part of it is the way the army *milieu*, in which many of Hartleben's plays are set, is handled. A young lieutenant has for a mistress a poor girl. His cousins by an unworthy trick make him think that she is faithless. He, therefore, is about to marry, through spite, another girl; but, discovering the deception, he calls his mistress back on the eve of the appearance of his betrothed. They go to the ball together that night and then die in one another's arms. A playwright who has a manner of his own in caustic, satirical comedy is Frank Wedekind. In *Der Kammer-sänger* the simplest theme is selected and treated without theatrical relief. Nevertheless, this play has, as have former pieces by Wedekind, made a favorable impression upon the young intelligence of Germany. Hugo von Hofmannsthal's *Der Thor und der Tod* is one of the plays produced in the new Secession Theatre in Berlin—a theatre the object of which is to give plays which shall register, through their character, a protest against the regulation kind of play. In *Der Thor und der Tod* a nobleman sits gloomily in his room. All his life has been devoted to love affairs in which there has been no true love. Death stands before him, but he protests that he has not yet lived. Death has in a mysterious way given him what he wanted, for in his last moments he feels love for mother, for friend, and for a young girl. Another "Secessionsstück" is *Königssöhne*, by Hilge Rode. In a dream two kings' sons appear. One represents renunciation and the struggle of the soul for universal dominion. The other represents pleasure and joy and happy energy. The first finds that he must renounce the kingly dignity and his beloved. To the joyous one joy comes. The other, he who represents renunciation, is envious, and kills his beloved and himself. Joy drives the second to sin and madness, but love redeems him. The death of his beloved plunges him into despair, but he finally emerges into calmness through the inspiration of his work. *Wienerinnen*, by Hermann Bahr, is a play which presents certain types of Vienna girls—those who are "nothing but rich" and those who, although rich, "have wit, heart, and kindness." Two Vienna ladies, representing these types, marry. The first, she who is "nothing but rich," makes of her life a game, frivolous and empty. She flirts with other men, and has her husband so well in subjection that he joins with her in indignant protest when a man with whom she has been heartlessly coquetting succeeds in escaping from her influence. The other girl is at first as frivolous as her contemporary; but her husband, while denying her nothing, awakens her feeling for what is right. He turns a lot of poetasters and false æsthetic critics out of his house. The first result is that his wife spurns him, but she finally yields to his satire and becomes thoroughly ashamed of herself.

Drama in France.—Owing to the Exposition, the Paris theatres gave an extraordinary number of revivals and very few new plays of importance. Among the latter the first place in popularity and literary, if not dramatic, excellence was held by *L'Aiglon*, a drama in verse, by Edmond Rostand. It is a remarkable study of the

weak and ambitious son of the great Napoleon, the Duke of Reichstadt. He is afflicted to a poignant degree with the *mal du siècle*—with that mixture of vain-gloriousness, sentimentality, and inertia which followed, at the time of the Empire, the precedent period of action. The dramatic conflicts of the play spring, therefore, from the inner difficulties of the young man's nature rather than from the clash of more objective obstacles. The intelligent French critics, comparing *L'Aiglon* with the author's play of the preceding year, *Cyrano de Bergerac*, are divided into two camps. Some prefer *L'Aiglon*, because of its greater reality, its psychological profundity. Others maintain that while *Cyrano* is in subject and treatment comparatively fantastic and impossible, it has the more external dramatic merits, and as a story is more developed and less monotonous. There is, however, a striking unanimity, not only in France, but also in America, where *L'Aiglon* has been produced in both English and French, in regard to the brilliant poetic achievement of Rostand's latest effort. Certainly, these two dramas point to the existence to-day of an abundant genius, whether he is to be classed as a dramatist or dramatic poet. He is only a little over 30 years of age, and the only quality which seems to limit his future probable great success is his tendency toward the artificial—what an eminent French critic calls the "*griserie des mots*," "*effets de scènes*," "*jongleries de style et de versification*." Other serious French plays of the year deal largely with social conditions, and belong mainly to the *comédie de mœurs* class. A number of farces, consisting largely in the conventionally frivolous treatment of sex, were also given. Among the serious plays of interest is *La Robe Rouge*, by Eugène Brieux, the man who, perhaps, more successfully than any one else in France carries on the *comédie de mœurs* tradition of Augier and Dumas fils. The subject of Brieux's present satirical play is the French judicial system. He shows how the magistrate is led almost logically to the most questionable deeds in order to attain the "red robe" of the councillor. The ambition to rise from the humble position of *procureur de la République* influences all of the latter's actions. A peasant is arrested, charged with the murder of an old man. The prosecutor constructs an elaborate theory of guilt, with which he is so occupied that he does not perceive the infamy of some of his methods to make the peasant and his wife confess what they have not done. Finally, the prosecutor's conscience is awakened, and he sacrifices his career to his duty as a man and abandons the prosecution. A melodramatic fourth act, logically unnecessary, is added. The wife of the accused peasant is unfaithful, and her guilt appears during the judicial proceedings. She is, consequently, driven away by her husband, and in revenge kills the judge. *La Poigne*, by Jean Jullien, is on a somewhat similar subject. A skilful provincial advocate, greatly respected by the community, goes into politics, and is instrumental in the election as deputy of a man who proves to be dishonest, but from whom the advocate accepts an appointment, which leads him, at one time an honorable "independent," into questionable deeds and ultimate disgrace. *Le Béguin*, by Pierre Wolff, is a play scorned and praised by the critics. *Une femme entretenue* deceives habitually her protector with her *amant de cœur*. The latter she is also capriciously unfaithful to with a chance acquaintance, and then with another. But she loves only her "*amant de cœur*" all the time. The doubtful moral of the play seems to be that a woman may love one man with her heart and many with her senses. A play on much the same subject, of farcical character, is *Sylvie, ou la Curieuse d'Amour*, by Abel Hermant. "It borrows," writes an indignant French critic, "from the writers of the last century that which is most disagreeable in their manner of laborious libertinism and cold obscenity." Sylvie changes husbands as often as France changes governments. In the meantime, there is an underplot of lovers. In every act she marries a new man, and is always on the point of falling into a lover's arms when the new man who is to be her husband arrives in the nick of time. *L'Empreinte*, another play by Abel Hermant, is full of psychological discussions, the thought of which, however, is well, if fantastically, developed. The thesis is that a woman once married is always married, that there can be no real divorce. The impression made by the first man with whom she has lived is maintained to be ineradicable. The author takes an extreme case. The woman is married against her will to a man she dislikes. After six years of torment she falls in love with another man, to whom she is married. But although she is now with the man she loves, she feels that she still belongs to her former husband, and is living in sin with her lover. That strong writer Maurice Donnay collaborated with Lucien Descaves in *La Clarté*. Several Quixotic spirits unite to bring about that ideal social condition where the joy of life will be shared by all. They found a small communistic society, but fail in their object through the action of human passion. Between these men and women who unite for a lofty purpose human love must come; and love is in its nature antisocial, for, when love obtains, the sacrifice of the individual for the common good is impossible. Maurice Donnay's play, *L'Education de Prince*, a dramatization of his own book, is remarkable for its cynical delicacy of treatment and its witty dialogue. *Le Cloître*, by the Belgian symbolist Émile

Verhaeren, is described as "an unclear melodrama of the spirit"—an inner tragedy which is felt, but not entirely understood by the spectator. An important adaptation from the Greek drama is *Alkestis*, by George Rivolet. In Jean Richepin's new play in verse, *La Gitane*, there are fine lyric passages. It is a romantic play of gypsy life, and is similar to other plays by Richepin in point of the bizarre subject and the classic form. *La Fronde*, by Lucien Bernard, satirizes provincial feminine theories. Cecile is a well-educated girl and a "new woman," who when she marries refuses, through conviction, to admit that her husband is the master. She is belligerent and miserable, until her husband, on the advice of a friend, speaks and acts like a masculine brute; and then she is all right! The play abounds in the "local color" of the provinces. *Poil de Carotte*, a play in one act, by Jules Renard, is the simple story of a child of 16 whom a severe and dry mother has brought up without love. The concealed suffering of the little boy is one day discovered by the father in a touching scene. *L'Enchantement*, by H. Bataille, describes in dramatic fashion the birth and progress of jealousy in the souls of two little country girls in love with the same young man. In *La Bourse ou la Vie* Alfred Capus pictures the life of a young married couple, ruined through extravagant expenditure, who seek, in *liaisons dangereuses* with a financier, the means of continuing their mode of existence.

DREYFUS, ALFRED. See FRANCE.

DUN, ROBERT GRAHAM, head of the mercantile agency known as R. G. Dun & Company, died on November 10. He was born at Chillicothe, O., in 1826, and, starting his business career in his native town, became clerk in a country store. The ability that became so prominent later in life evinced itself early, and before long he was one of the partners in the business. He went to New York City and became connected with the firm of Tappan & Douglass, which conducted a mercantile agency. He united with Douglass in 1854 to conduct the business, and in 1859 became head of the firm by purchasing his partner's interest. At that time the agency conducted 17 branch offices, which, under the management of Dun, increased to 150, in this country, Europe, Australia, Cuba, and Mexico, and which have developed the business to an indispensable factor in the mercantile world.

DUNBAR, CHARLES FRANKLIN, LL.D., professor of political economy in Harvard University, died in Cambridge, Mass., January 30, 1900, at the age of 70 years. He was born at Abington, Mass., and was educated at Harvard, graduating in 1851. Three years later he was admitted to the bar, but he turned his attention to journalism, and finally became editor of the *Boston Daily Advertiser*. In 1871 he accepted the chair of political economy at Harvard, a position he retained at the time of his death. He was regarded as a high authority on economics, especially on the subject of banking. Among his writings are *Chapters on the Theory and History of Banking and Currency*, *Finance and Banking*.

DUNKARDS, TUNKERS, OR GERMAN BAPTISTS, a sect resembling Quakers in simplicity of dress and speech, originated in Germany and settled in the United States, 1719-29, near Philadelphia. Their congregations are organized into districts, which elect an annual meeting, whose decrees are binding on the entire church. The Dunkards include (1) German Baptists (Conservative), with 2612 ministers, 850 churches, and 95,000 members; (2) German Baptists (Old Order), with 150 ministers, 100 churches, and 3500 members; (3) German Baptists (Progressive), with 231 ministers, 173 churches, and 12,787 members. Of these bodies, the first and third show material growth since 1890, but the Old Order Brethren have sustained a considerable decrease. The sect maintains missions on the continent of Europe, and in India and Asia Minor; it controls some educational institutions, and has a publishing house at Elgin, Ill., which is also the headquarters of the General Missionary Committee.

DUPERRÉ, BARON VICTOR AUGUSTE, French vice-admiral, died in Paris, March 26, 1900. He was the son of Admiral Victor Guy, Baron Duperré, and was born August 4, 1825. He served in the Baltic, participating in the blockade of Sveaborg and the bombardment of Bomarsund. In 1865 he became captain of a ship of the line and chief of cabinet to Minister of Marine Chasseloup-Laubat. He was appointed governor of Cochin China in 1874, and five years later was promoted to the rank of vice-admiral. He repeatedly commanded the squadron of evolution, and became vice-president of the council of the admiralty.

DUTCH EAST INDIES, a dependency of the Netherlands, comprising the islands of Java, Sumatra, the greater part of Borneo, part of New Guinea, Celebes, Moluccas, Timor Archipelago, Bali, Lombok, and a few minor groups. Their total area is estimated at 736,400 square miles, with a population of over 34,000,000, consisting of 63,000 Europeans, 420,000 Chinese, 24,000 Arabs, 27,000 other Orientals, and 32,000,000 natives. The prevailing religion of the natives is Mohammedanism, only a small part of them having been converted to Christianity. The dependency includes con-

siderable territory where the authority of the Dutch is hardly recognized, the districts being administered by native chiefs. At the head of the administration of the dependency is the governor-general, who is vested with both executive and legislative powers, the latter being exercised subject to the approval of the home government. The governor-general is assisted by a council of five members, who, however, do not share his powers. There are two sets of laws in operation in the dependency: the one for Europeans, which is practically the same as that in the home country and is administered by European judges; the other for the natives, conforming to their customs and traditions and administered by native chiefs. For administration purposes the dependency is divided into residencies, divisions, regencies, and districts, some of them administered by Dutch officials directly and others through native chiefs. The officials receive for their services either a definite salary or a percentage of the taxes collected by them. The official returns for the commerce of the islands during 1898 (the last officially reported) give the coffee production as 51,067,800 pounds, against 156,503,866 pounds in 1897. The production of cinchona was 306,696 kilogrammes on the government plantations, 3,817,234 on lands on *Emphyteusis*, and 337,824 on private lands. The production of tobacco in Java and Sumatra amounted to 38,751,306 kilogrammes. The output of the Banca tin mines in 1898 amounted to nearly 11,000 tons. The commerce of the dependency during 1898 amounted to over 300,000,000 guilders; imports, 179,821,432 guilders; and exports, 217,754,097 guilders. Of the total imports, 54,500,000 guilders came from Netherlands, 19,300,000 from Great Britain, and 52,600,000 from Singapore. The principal articles of import were foodstuffs, 19,000,000 guilders; and cotton goods, 37,300,000 guilders. The principal articles of export are sugar, coffee, rice, and tea. The number of vessels that entered the ports of the colony in 1898 was 3996, with a tonnage of 1,574,238. In the budget for 1900 the revenue of the dependency is given as 144,457,000 guilders, and expenditure as 147,366,000 guilders. The principal items of revenue, according to the budget, are direct taxes, 58,313,000 guilders; sale of products by the government, 30,034,000 guilders; monopolies, 21,700,000 guilders; and from other sources, 24,767,000 guilders. The chief items of expenditure are: Department of finance, 25,878,000 guilders; war, 30,501,000 guilders; public works, 25,652,000 guilders, and education, religion, and industry, 17,887,000 guilders. The actual revenue for 1898 amounted to 131,880,000 guilders, and the expenditures to 148,800,000 guilders, leaving a deficit of nearly 17,000,000 guilders. The total length of the railways in the dependency at the end of 1898 was 1269 miles, of which 1047 miles belonged to the state. The cost of construction of the state lines down to December 31, 1899, amounted to 166,657,000 guilders. The gross receipts from the state lines in 1898 amounted to 15,759,000 guilders, and the cost of operating to 8,343,000 guilders. There were also about 42 miles of tramway lines owned and operated by the government. There were in 1898, 211 post-offices, 112 telegraph and 33 telephone offices. The total length of the telegraph lines was 6834 miles and that of wires, 10,995. The educational institutions of the dependency in 1898 consisted of 7 gymnasias, with 102 teachers and 1016 students, of which 20 were non-Europeans, and 184 primary schools for Europeans, with 54 teachers and 14,995 pupils. The total cost of maintaining the schools for Europeans amounted in 1898 to 2,188,856 guilders. The number of schools for the natives in 1898 was 1264, with 134,946 pupils, of which 519 schools, with 85,340 pupils, were entirely supported by the government. The amount spent by the government for the education of the natives in 1898 was 1,353,760 guilders. There were besides 519 schools for the foreign Orientals, with 8688 pupils. The colonial army at the end of 1898 consisted of 1428 officers and 42,235 sub-officers and soldiers, of which 15,911 were Europeans. The navy, which is only partly colonial, had, in 1898, a *personnel* of 3288 men. The number of ships was 20 in the Indian navy and 4 in the auxiliary squadron. See COLONIES and JAVA.

DUTCH GUIANA, or SURINAM, a colony of the Netherlands, lying between British Guiana and French Guiana on the east and west respectively, with the Atlantic Ocean on the north and Brazil on the south, comprises sixteen districts, of which the total estimated area is 46,060 square miles (about the size of Mississippi), and the population, exclusive of negroes living in the forests, upward of 65,000. As the capital, Paramaribo, has about 30,000 inhabitants, it may be seen that the number of whites per square mile is exceedingly small. The colony is administered by a governor, who is assisted by a council, comprising, besides himself, three members and the attorney-general, all of whom are appointed by the crown. The representative body, or Colonial States, with the exception of four members appointed by the governor, is elected each year by popular vote in the proportion of one representative for each 200 electors. There is a superior court of justice, all of whose members are nominated by the crown, and two circuit and three cantonal courts. For defence and the maintenance of order there are, besides a small number of guard ships and vessels of the Dutch navy, a civic guard, militia, and garrison, comprising alto-

gether about 2100 men. Religious liberty is guaranteed by the government. There are about 25,500 Moravian Brethren, 11,800 Roman Catholics, 9700 Hindus, 9000 Reformed and Lutherans, 2700 Mohammedans, and 1300 Jews. Besides a few schools for secondary education, there have been reported (for 1897) 19 public primary schools, with 2369 pupils, and 36 private primary schools, with 4849 pupils.

Local revenue, which is largely derived from customs, excise, and taxes on real and personal property, is not sufficient to meet the expenditure of the colony, so that an annual subvention from Holland is necessary. Statistics of finance and trade in guilders (the guilder, or florin, being worth 40.2 cents) are as follows:

	Local Revenue.	Subvention.	Expenditure.	Imports.	Exports.
1897.....	2,083,000	180,000	2,263,000	5,294,424	5,241,671
1898.....	2,141,000	270,000	2,348,000	.....	.....
1899.....	2,174,000	177,000	2,351,000	6,173,130	5,563,362

The principal products include cacao, sugar, bananas, coffee, maize, balata gum, rice, rum, and molasses. Since 1876 gold placer mining has been carried on, the total reported value of the output up to the beginning of 1897 being about 21,872,000 guilders. In the latter year over 903,000 grammes of gold were produced, and 859,905 grammes, valued at £1,78,000 guilders, were exported. Communication in the colony is effected largely by river navigation. Several English companies have been formed for gold exploitation. Development of the colony's resources is retarded by the lack of adequate means of communication and by "the inveterate habit of the natives of working only when they please or when forced by necessity." Since the abolition of slavery in 1863 the most important economic question has been that of manual labor. The most important class of immigrants are coolies from the British East Indies, who usually prove to be vigorous and industrious, and who, upon the expiration of their labor contracts, often remain in Surinam and engage in trade. In 1897 a society was organized in Holland to investigate the mineral resources of the colony. It has received a grant of over 12,000 acres situated between Lawa and Paramaribo, and proposes to connect by rail this district with the capital.

DUTCH REFORMED CHURCH. See REFORMED CHURCH IN AMERICA.

DYER, Rev. Dr. HEMON, Episcopal clergyman and teacher, died July 30, 1900. He was born in Shaftesbury, Vt., September 24, 1810, and, graduating from Kenyon College, Ohio, in 1833, was for some time professor in the Western University of Pennsylvania, serving as its president from 1844 to 1849. During this time Dr. Dyer did extensive missionary work in Pittsburg. Afterward removing to New York, he held the position of secretary of the Evangelical Knowledge Society, and became editor of the *Episcopal Quarterly Review* in 1854. Dr. Dyer was a member of the executive committee of the Christian Commission during the Civil War, and was especially active in the establishment of Mexican missions. He wrote *Voice of the Lord Upon the Waters* (New York, 1870), and *Records of an Active Life*, an autobiography (1886), and edited a series of evangelical biographies.

DYSENTERY. See SERUM THERAPY.

EARTHQUAKES. Among recent publications on earthquakes is the report issued by the Earthquake Investigating Committee of Japan, a country which is noted for its seismological movements. Observations have been carried on by this committee since its organization in 1892, and the work shows great care and detailed study.

It is stated that one of the principal objects of the committee is to deal with the practical aspects of seismology, and to secure the adoption of means to lessen, as far as possible, the loss of life and damage to buildings from earthquakes. Consequently in their researches they have given much attention to the resistance to earthquakes of materials of construction, and also to the effect of earthquakes upon different types of structures. Among the special features in the report is a description by B. Mano of the machine known as an oscillating table, which can be made to oscillate as it would during the passage of a series of earthquake waves. This table can be vibrated either horizontally or vertically, and each motion can be produced independently or be adjusted with regard to amplitude and frequency so that almost any kind of disturbance can be imitated. The table is operated by means of two steam engines, and as many as 270 oscillations per minute can be produced. B. Koto gives a paper *On the Scope of the Volcanological Survey in Japan*. He considers that the majority of earthquakes are intimately connected with the stresses of mountain building, and are not due to volcanic eruptions. Still another portion of the report deals with the construction of earthquake-proof wooden buildings, in which it is pointed out that brick structures and tile or slate roofs are all dangerous from the seismic standpoint. For strengthening houses the use of iron plates and

straps with bolts to form the joints is strongly advised, and in this connection the interesting fact is noted that the new palace of the prince imperial is a modern structural steel building constructed especially to resist earthquake shocks. Oldham considers that in the complete record of an earthquake shock three types of waves must be recorded—viz.: (1) Condensational waves; (2) distortional plane waves which travel through the earth; (3) elastic or surface waves which travel around the earth in both directions. The first may be indistinct, and the second may at times be light also.

BARTHWAX. See OZOKERITE.

EAST AFRICA is the general term applied to the British, German, and Portuguese possessions on the eastern coast of Africa, extending from the Egyptian Soudan, Abyssinia, and Italian Somaliland on the north to the British colonies of Natal and the Transvaal on the south. The total estimated area is about 1,800,000 square miles. See the following four articles and the article **UGANDA**.

EAST AFRICA, BRITISH, an immense territory embracing some 1,120,000 square miles, extends from the Congo Free State on the west and the Egyptian Soudan and Abyssinia on the north to the Indian Ocean, touching Italian Somaliland on the east and German East Africa on the south. This territory comprises the East Africa Protectorate and the Uganda Protectorate (*qq.v.*), and with it is included the island protectorate of Zanzibar (*q.v.*), which lies off the coast of German East Africa. Great Britain has no colonies proper in this part of Africa.

EAST AFRICA, GERMAN, a protectorate of Germany, extending for about 620 miles on the Indian Ocean between British East Africa on the north and Portuguese East Africa, the British Central Africa Protectorate, and northern Rhodesia on the south, has an estimated area of 384,184 square miles and an estimated population of 8,000,000, of whom about 1100 are Europeans, about 900 being Germans. On the west the protectorate is bounded by the Congo Free State, Lake Tanganyika, and northern Rhodesia, and is separated from the Central Africa Protectorate by Lake Nyassa. Administration is in the hands of an imperial governor, resident at Dar-es-Salaam, a coast city of some 13,000 inhabitants. Late in 1900 the governor, Major-General von Liebert, resigned his position, which, it was reported, would be filled by Captain Count von Goetzen, the African explorer. There is a military force of about 1750 men. Besides Dar-es-Salaam the principal cities, all on the coast, with their estimated populations, are: Bagamoyo, 13,000; Kilwa, Saadani, and Pangani, each 10,000; and Mikindani, Tanga, and Lindi, each 5000. Among the products are coffee, tobacco, cotton, corn, rubber, gum copal, copra, wax, ivory, and sesame. The last five constitute the chief exports. Coffee has been exported since 1805, the export in 1898 amounting to nearly 300,000 pounds. Agriculture is the only industry of the natives, but the land does not afford them sufficient support, and large importations of rice and grain are consumed. Other imports include cotton goods, iron goods, petroleum, sugar, liquors, and tobacco (manufactured). In 1897 the imports and exports amounted respectively to \$2,152,015 and \$1,175,364; in 1898, \$2,820,922 and \$1,032,241. There are practically no manufactures. Banks as yet have not been established, and business transactions are effected through the banks of Zanzibar. There are valuable forests, and coal, iron, salt, and some gold occur. The resources of the protectorate are not developed, but the German government encourages agriculture and commerce. For the fiscal years 1900 and 1901 the imperial contributions amounted to 5,985,000 marks (\$1,424,430) and 6,830,000 marks (\$1,615,540) respectively. A railway is in operation from Tonga to Pongwe, a distance of only 10 miles; it is being extended to Kargwe and Nomba. Other lines of considerable extent have been projected. The protectorate is connected by cable with the British protectorate of Zanzibar, and a considerable amount of telegraph line has been erected, and arrangements for much more have been made.

EAST AFRICA, PORTUGUESE, a large territory belonging to Portugal, extends along the Mozambique Channel, or Indian Ocean, from Cape Delgado to Kori Bay, a little south of Delagoa Bay, and is bounded on the north by German East Africa and British Central Africa, and on the west by British Central Africa, British South Africa, and the Transvaal. Its two largest districts are Mozambique and Lourenço Marques, lying to the north and south of the Zambesi River respectively, the other districts being Zambesia, Inhambane, and Gaza. The total estimated area is 301,000 square miles, and the estimated population, 3,120,000. The dependency is administered by a royal commissioner, appointed for three years, but the Manica and Sofala region is administered by the Mozambique Company, possessing a royal charter. The district of Gaza is temporarily under military control, and a region near Lake Nyassa and the upper part of the Rovuma River is administered by the Nyassa Company, which also has a royal charter. The military force consists of about 4900 men, of whom some 3250 are natives. The estimated revenue and expen-

diture for 1898 were 4,232,326 milreis (\$4,570,912) and 3,945,765 milreis (\$4,261,426) respectively. A number of companies have been organized for the development of the country, the trade of which has become important. Many of the imports, however, have been in transit for the mining regions of Rhodesia and the Transvaal. The leading products and exports are oilnuts and seeds, rubber, and ivory; the chief imports are cotton goods and alcoholic liquors, while the imports in transit are largely made up of machinery and other mining requisites, foodstuffs, and clothing. Gold mining has begun in Manica. The total reported imports in 1898 amounted to \$9,680,257; exports, \$1,175,496; transit trade (that is, trade with British Africa or the Transvaal through the Portuguese ports), \$9,472,684. Trade is carried on chiefly with Great Britain, Portugal, Germany, France, India, and Natal. The principal ports are Lourenço Marques and Beira; other ports are Quilimane, Chinde, and Mozambique.

A railway is in operation from Lourenço Marques, on Delagoa Bay, to the Transvaal frontier, a distance of 57 miles, and thence extends 290 miles to Pretoria. Another line runs from Beira, near the mouth of the Pungwe River, for 222 miles to Umtali, near the Mashonaland boundary. This railway was completed as far as Umtali in April, 1898, and a year later was extended about 180 miles to Salisbury. The gauge of the Beira line is being widened to that of the line in Mashonaland. The opinion was expressed in 1900 that these connecting railways would become the great freight line from the coast to Rhodesia, as Beira is much nearer that part of Africa than is Cape Town, the distance by rail from the latter place to Bulawayo being 1360 miles. The Beira road passes through a swampy and very unhealthful country. There are about 950 miles of telegraph line in the dependency. Lourenço Marques has wire connection with the Transvaal system, and Beira is in telegraphic communication with Cape Town by way of Salisbury and Bulawayo.

It was announced in December, 1900, that the Zambesi exploring expedition, which, under the command of Lieutenant-Colonel A. J. Arnold had been sent out a few months before by the Mozambique Company at Beira, had been successful in its attempt to effect the submission of the powerful chief Makombie, who for a number of years, it is said, has given considerable trouble to the whites.

During 1900 the Boers succeeded in importing supplies of food and ammunition by way of Lourenço Marques, but the Portuguese authorities maintained amicable relations with Great Britain, evinced particularly in the assistance given by them for the passage of a British force through Portuguese territory. On September 23 about 3000 Boers, having laid down their arms and crossed the frontier, gave themselves up to the Portuguese officials. In September President Kruger escaped to Lourenço Marques, whence on October 29 he sailed for Europe on a Dutch warship. See DELAGOA BAY.

EAST AFRICA PROTECTORATE, a British protectorate, extending for some 400 miles along the Indian Ocean between the Umba and Juba rivers and reaching inland to the borders of Uganda (*q.v.*), has an estimated area of nearly 1,000,000 square miles and an estimated population of 2,500,000, including some 25,000 Asiatics and 450 Europeans and Eurasians. The protectorate, which is not yet well organized, is administered by a British commissioner and consul-general (Sir C. N. E. Eliot in 1900), who is also British agent and consul-general in Zanzibar. Administratively the protectorate comprises four provinces under sub-commissioners: The Coast Province, capital Mombasa, which is also the capital of the entire protectorate; Tana-land (including the former small coast protectorate Witu), capital Lamu; Ukamba, capital Machakos; and Juba-land, capital Kismayu. Mombasa, one of the chief cities on the East African coast, has some 30,000 inhabitants. Improvements are being made on its two excellent harbors. A cable connects the city with Zanzibar and a telegraph line with the port of Lamu.

Notwithstanding famine and smallpox, and a consequent scarcity of labor in 1899, a certain amount of progress is noted in the protectorate. The revenue, which is derived from customs duties, was £43,841 for the fiscal year ending March 31, 1898; for 1899, about £50,000; for 1900, about £53,000. The values in rupees of the imports and exports for years ending March 31 have been respectively as follows: 1898, 4,464,827 and 1,087,266; 1899, 7,025,000 and 1,067,000; 1900, 6,625,000 and 1,825,000. Of the imports for 1900, which include cotton goods, provisions, building materials, beads, and spirits, 40 per cent. came from India and Burma, 30 per cent. from the United Kingdom, and 10 per cent. from Germany. The principal exports are ivory, rubber, grain, hides, copra, and gum copal. The increase in the fiscal year 1900 was largely due to the Uganda Railway and peaceful conditions in the interior. Though no systematic effort has yet been made for the development of rubber, the export of this product is increasing, but the amount is far from being commensurate with the capabilities of the country. The importation of low-class spirits has been checked by the administration. A railway from Mombasa to Ugone Bay on the east shore of Victoria Nyanza, in Uganda, a distance of 550 miles,

has been under construction since December, 1895, and on March 31, 1900, was completed as far as Naivasha, 400 miles from Mombasa; by October 30 it had been extended 52 miles, while work was in progress over a distance of 38 additional miles. In 1900 it was stated that £3,020,000 had been expended on the road, and in view of the official report that £1,930,000 more were needed, the appropriation of such an amount was voted by the British Parliament in June. In December it was announced that a contract had been made with the American Bridge Company for the construction of 34 bridges on the railway. It was said that 8000 tons of structural steel would be required, the value of the order exceeding \$1,000,000. In 1900 the annual earnings of the road were reported at about £60,000, which amount it is thought will be doubled when the line is completed. A telegraph parallels the railway line from Victoria Nyanza to the sea, but in the autumn, as a result of the Wa Nandi outbreak (see UGANDA), the western end of the line was torn down for about 50 miles.

In November, 1900, there was an outbreak of natives—the number under arms being estimated at 4000—in Jubaland, a province in the eastern part of the protectorate separated from Italian Somaliland by the Juba River. On the 13th of the month the sub-commissioner, who had left the port of Kismayu for a tour inland, was attacked and treacherously murdered. A force was immediately concentrated at Kismayu to quell the insurrection. The natives in revolt are a branch of the Somali race, who for many years have been pushing southward and, having driven back the Gallas, have acquired control of the outlets to the sea and consequently the monopoly of the trade from the interior. The warriors, who show courage and intelligence in fighting, are armed with a long spear, a short club, a short, broad knife, and a hide shield. The southern Somalis are a mixed race who have adopted the Mohammedan religion but retained their own language.

ECLIPSE OF MAY 28TH. See ASTRONOMICAL PROGRESS.

ECONOMIC ASSOCIATION, AMERICAN, organized in 1885, has about 600 members. President, Richard T. Ely, LL.D., professor of political economy, University of Wisconsin; secretary, Professor Charles H. Hull, of Cornell University. The thirteenth annual meeting was held at Detroit and Ann Arbor, Mich., December 27-29, 1900. The president's address dealt with *Competition: Its Nature, Its Permanency, and Its Beneficence*. Professor Ely believes that those who deprecate competition fail to draw the line between competition proper and the abuse of it, which is really "criminal and wrong action." He defines competition as essentially a "struggle of economic interests," but "a struggle which has its metes and bounds." To him competition is but an expression of the universal struggle for existence which pervades not only society at all ages, past and future, but also the sub-human organic world. But even in the latter competition does not mean exclusively ruthless destruction of the weak by the strong. Even in the animal world the struggle for life includes also the struggle first for the life "of all offspring, but later [for that of] mates and companions. Again, attention has been called to association and mutual aid among animals as part of the struggle for existence." Passing to competition in human society, Professor Ely believes that while competition took on a more cruel form among primitive men than among animals, it has been constantly undergoing a process of refinement in the course of evolution of human society. "With social evolution slaughter gradually recedes into the background and falls below competition into the region of crime. When men considered it dishonorable to gain by the sweat of the brow what could be won by the sword, battle belonged to economic competition; not so in the age of industry." And as among animals, so with men, social evolution "reveals growing association along with competition," and the essential feature in the evolution of competition "is the enlargement of the associated competitive group." The higher level of competition to which the latter constantly tends creates a different type of what is "fittest" to survive, which Professor Ely illustrates by comparing the respective kinds of competition for public service prevailing under a spoils system and that based on competitive examinations. The man who survives under the former is quite different from the successful man under the latter. So with society in general "competition comes to mean worthy struggle, and true progress implies that success will be secured hereafter by conformity to higher and ever higher, nobler and ever nobler ideas." "Competition thus conceived is beneficent, and the competitive order rightly controlled by society furnishes to men the maximum of pleasure with a minimum of pain."

The paper of the greatest practical importance was that submitted in the form of a report by the special committee on "Uniform Municipal Accounts and Statistics." At present the United States is the most backward country in the matter of municipal finances and statistics relating thereto. There is no uniformity in methods of accounting, not only when we compare one city with another, but even in the several departments of the same municipality. This makes intelligent comparison, not to

speak of scientific study, of municipal finance practically impossible in so far as such study has to be based on observation of existing conditions. A few attempts have been made, both by private individuals and organizations and by the federal government, to correlate the many facts and data of municipal statistics, but the attempts have proven largely a failure, both on account of their sporadic nature and lack of uniformity of material. As the matter is of more than academic importance, since no work of municipal reform is possible without a positive and detailed knowledge of the necessary facts, several national organizations have taken the matter in hand and appointed committees to bring about the desired change. These include, in addition to the American Economic Association, the American Gaslight Association, the American Public Health Association, American Society of Civil Engineers, American Society of Municipal Improvement, National Electric Light Association, National Municipal League, and several others. The report of the committee of the American Economic Association, after describing the present state of affairs, concludes with the following resolutions:

1. That the interests of good municipal government, economics, and public finance demand the collection and publication of State and national municipal statistics.

2. That such statistics to be of service should be based on uniform municipal accounting.

3. That, as a rule, American municipal accounting is in a most deplorable condition, being unsystematic, incomplete, and misleading, with little correlation between the accounts of different departments of the same city and the utmost diversity in the accounts of different cities, rendering comparison of the working of different departments and cities always difficult and often impossible.

4. That certain mooted questions of public policy, like municipal ownership and day labor as compared with the contract system of executing public work, can never be thoroughly or properly studied until greater uniformity in municipal accounts and reports has been secured.

5. That co-operation between the various economic, sanitary, engineering, and other technical societies interested in or devoted to municipal affairs or some branch thereof should be encouraged, to the end that uniform schemes for municipal accounts and reports, covering the various municipal undertakings and interests, whether in public or private hands, may be formulated and adopted.

6. That after the formulation and adoption of these schemes by such co-operative effort it is desirable that steps should be taken to put them into use by the various municipalities of the country, either under the direction of State boards of municipal control or special State commissions for different classes of undertakings and interests.

7. That a yearly comparative summary of the municipal statistics of the whole country, made and published by some branch of the national government, would place much valuable information within the reach of many investigators, to whom it would otherwise be unavailable, through lack of time to compile it or through the impossibility of securing the many necessarily scattered reports.

8. That the summary of statistics for cities of 30,000 and upward, compiled and published by the United States Department of Labor in 1899 and 1900, should be continued pending improvements in municipal accounting, and that the present Census Office should make an exhibit, showing the nature and general extent of municipal activities (a true census, or count), which would serve as a basis for more detailed inquiries after the organization of a permanent census or other statistical bureau with a staff of experts in municipal engineering, sanitation, vital statistics and sociology, finance and economics generally.

The question of "Taxation of Quasi-public Corporations" was discussed in a paper by Dr. Frederick C. Howe. He dwelt on the lack of system and uniformity in the present State and local taxation. The confusion is due largely to legal and constitutional obstacles, which are especially great when it comes to taxation of corporations of a quasi-public character, such as railroads, telegraphs, telephones, express, gas, water, electric lighting, and street railway companies. In recent years the policy has been to tax property rather than earnings, with a preference for a franchise tax to a pure property tax. Its chief advantages lie, first, in the fact that it has been approved by the United States courts; and, second, that it does away with the arbitrary and unscientific appraisements of local assessors by basing the tax on solid, indisputable ground—namely, the estimate of the commercial world as expressed in the market value of the stock of the company plus the par value of the bonds. In some cases, as, for example, under the Ford Franchise law recently passed in New York, the physical property is appraised in addition. This method of taxing public franchises seems to promise a way out of the present confusion satisfactory to the courts and in line with modern ideas of financial science. See COLONIES.

ECONOMIC ASSOCIATION, IMPERIAL FREE (Russian), founded in 1765. President, Count Peter A. Heyden, St. Petersburg; secretary, D. I. Richter. The

society has nearly 1000 members, and is divided into three sections: (1) Agriculture; (2) trades and industries pertaining to agriculture; (3) agricultural statistics and political economy. The first two sections of the association deal with purely practical problems. They organize exhibits of agricultural products, assist in founding agricultural schools, recommend to the government or carry out themselves measures that would further diversification of agricultural industries, such as dairies, truck gardening, etc. The third section is a strictly scientific body of men devoting itself to study of various economic problems, usually those which happen to interest the country most at any given time, and is composed mostly of professors of economics and statistics, government statisticians, and writers on economic subjects. The association as a whole and its several sections are frequently invited by the government to select representatives to various government commissions appointed to deal with difficult problems requiring expert scientific knowledge.

A national conference of statisticians from the various provinces of Russia met at St. Petersburg under the auspices of the third section of the association on February 15-22, 1900. The object of the conference was to work out a uniform plan of procedure for the provincial statistical bureaus, which would practically result in the taking of an agricultural census of the empire. The idea was suggested by the fact that under a recent law the bureaus are engaged in the work of appraising the value of landed property throughout the empire for taxation purposes. It was the unanimous opinion of the conference that the scope of the inquiry should be enlarged so as to obtain results that would throw a light on the present condition of the various agricultural classes, and show what changes have taken place in Russian agriculture since the last inquiry of that kind, which was made in 1882. In the census of that date the questions asked by the enumerators served to bring out information as to the area of land allotted at the emancipation (1861), of that purchased as private property, or farmed; the way in which the soil was tilled, whether it was cultivated by the peasant himself or by hired labor; the resources of the peasant, whether he had the necessary horses and cattle; "the labor forces of the family, male and female, the business, apart from agriculture, of every adult member of the family, and whether the members sought work at a distance from home," etc. The inquiries were stopped, however, in 1888 by the government, which did not like the results—the disclosure of the great destitution of the peasants caused by high taxes, excessive rents and insufficiency of land—and prohibited "any investigations into the relations between landlord and peasant." The programmes of statistical investigations were put since then under the control of the central government. In 1893, however, the government gave a new impetus to statistical research, this time out of purely fiscal considerations, as the statistical bureaus of the different provinces were ordered to undertake, in co-operation with other governmental bodies, the appraisal of land throughout the empire. The work thus outlined for the statistical bureaus was further amplified by the law of January 8, 1899, which furnished the bureaus with an opportunity to enlarge the scope of their inquiries. The present conference was thus a result of the late developments, and registered a bold attempt on the part of the Russian statisticians to join their efforts in the most effective way, so as to bring about the realization of their ideal, an agricultural census of the country, in spite of the meagre means at their command.

The work of the conference was divided among six committees, the most important of which were: The committee on instructions to enumerators, the committee on current statistics, and the committee on unification of the statistical work of the separate provinces. Among the questions considered by the committee on instructions were such difficult problems of theory (which, however, have an important bearing on statistical practice) as the definition of "real estate," under which are usually included land, dwellings, factories, and stores; the definition of such terms as *value*, *productivity*, *net production*, and *rent*; the question as to whether the *entrepreneur's profit* should be included in the net production of the land, and *amortization* in the value of buildings.

The following questions were proposed for treatment in the inquiries: (1) Population; age, sex, degree (or lack) of education, etc. (2) Trades and industries apart from agriculture. (3) Number and kind of agricultural laborers employed, if any. (4) Method of cultivation. (5) Cattle raising. (6) Amount of land owned, bought and rented. (7) Relations of peasant to the commune. (8) Crops raised and the proportion of land under each.

After considerable discussion, which brought out differences of opinion, it was resolved to refer the whole matter to a special permanent commission of leading statisticians residing in St. Petersburg and near-by towns, which was charged with the preparation of a detailed programme of statistical inquiry touching both the collection and tabulation of data. In addition to the larger work, the commission is also to work out a plan for an annual collection of statistical data, which while not including every farm in Russia, should be organized in such a way as to cover a

number of typical farms in each of the following classes: large farms employing hired labor; farms cultivated by their owners and members of the family; farms rented out by owners for lack of means to cultivate them on their own account; small holdings of industrial working men.

As a crowning effort an annual publication is to be undertaken bringing together the results of the researches of the several statistical bureaus, and covering every phase of the industrial life of the country, giving statistics of agriculture, manufacturing, mining, transportation, credit and banking, insurance, prices and consumption of leading articles in use by the people, sanitary conditions, crime, education, etc.

ECUADOR, a South American republic on the Pacific coast, lies between Colombia and Peru. The capital is Quito.

Area and Population.—The republic consists of 16 provinces and 1 territory, the total estimated area of which is about 120,000 square miles. This figure includes the area of the Galapagos Islands, an Ecuadorean possession of 2400 square miles. Portions of the Colombian and Peruvian boundaries have not yet been definitely delimited. According to the last official estimate, the inhabitants numbered about 1,270,000, of whom some 100,000 were of Spanish descent, 870,000 Indians, and 300,000 of mixed race. The approximate populations of the principal cities are: Quito, 80,000; Guayaquil, in 1895 about 50,000; in 1900 nearly 60,000; Cuenca, 25,000; Riobamba, 12,000; Loja, Ambato, and Latacunga, each about 10,000.

Government.—By the constitution the chief executive authority is vested in a president, who is elected by popular vote for a term of four years. He is assisted by a cabinet of five members, responsible with himself to congress; and this cabinet, the president, and seven others constitute a council of state. The president in 1900 was General Eloy Alfaro. The legislative power devolves upon a congress, consisting of a senate and a house of representatives, members of the former being elected for four years by direct vote to the number of two from each province, and of the latter for two years by direct vote in the proportion of one representative for each 30,000 inhabitants. The congress convenes on the 10th of each June. Legal voters must be Roman Catholics, able to read and write. The administration of the provinces is directed by governors appointed by the federal government. Besides local magistrates and inferior courts, there are at different places six appellate courts and the supreme court at Quito.

Army.—The regular army, consisting of infantry, cavalry, and artillery, numbers upward of 3300 officers and men, and the national militia is said to number about 30,000. The Academy of War, the first military institution formed in the republic, was opened at Quito on March 10, 1900. Practically, Ecuador has no navy, its only vessels being a transport and a torpedo launch.

Finance.—About 80 per cent. of the total revenue is derived from customs; other sources of revenue are taxes on real estate, stamps, liquors and tobacco, and monopolies on salt and gunpowder. For both 1897 and 1898 the estimated revenue and expenditure were 9,093,551 sucres and 11,005,141 sucres respectively. For 1899 the same figure for the revenue estimate was retained, and the estimated expenditure was about 7,000,000 sucres. It appears, however, that the actual revenue and expenditure in the fiscal year 1897 were 6,760,555 sucres and 5,690,220 sucres respectively; in 1898, revenue, 7,805,190 sucres; expenditure, 7,735,710 sucres; while in the fiscal year 1899 the president stated in his message to the congress, August 23, 1900, that the revenue, including a small balance from the previous year, was 7,625,830 sucres, and the expenditure, 6,662,945 sucres.

In 1899 outstanding bonds of the foreign debt amounted to \$3,372,916 (about 6,931,600 sucres); arrangements for the purchase of these bonds, which are held chiefly by English capitalists, have been made by the Guayaquil and Quito Railway Company. According to the latest figures available, the internal debt stands at 7,500,000 sucres.

Pursuant to a law enacted in November, 1898, the gold monetary standard will be established in 1901. Though the nominal standard has been bimetallic, the actual circulation has been limited to silver, unredeemable in gold, and to paper (bank-notes), redeemable only in silver. The silver circulation, of which some two-thirds is controlled by two Guayaquil banks, amounts to about 3,000,000 sucres; at the end of 1898 the bank-note circulation amounted to 5,660,422 sucres. The nominal value of the sucre is one-tenth of an English sovereign, or about 48½ cents; but, according to the estimate of the director of the United States mint, it was worth on October 1, 1900, 45.1 cents.

Industries and Commerce.—Agriculture is the principal industry; and though mining bids fair to become important, it has not yet been developed. The most important product is cacao, of which Ecuador yields more than any other country, or about 30 per cent. of the world's production; other products include coffee, rubber, hides, ivory nuts, sugar, cotton, cinchona bark, and tamarinds, all of which are to some extent exported. Cacao is produced chiefly in the coast province of

Los Rios, but it is cultivated also in the other coast provinces of Guayas, El Oro, Manabi, and Esmeraldas. The total cacao production has been reported as follows: 1897, 22,000 tons; 1898, 21,089 tons; 1899, 27,703 tons. Rubber gathering is an important industry. As the supply in easily accessible districts is becoming exhausted, some attention has been given to the planting of rubber trees; but farther inland large tracts of rubber forest are said to exist. A report published in 1900 stated that for the years 1897, 1898, and 1899 the total rubber exports were valued, respectively, at \$390,000, \$775,000, and \$600,000; and that for the three years the approximate percentages sent to the United States were, respectively, 90, 60, and 75. Various minerals occur in considerable quantities, including gold, copper, lead, iron, coal, and petroleum; but mining enterprises are very few, being almost limited to river washings for gold by the Indians and gold placer workings in Esmeraldas and at Zaruma in Oro. Ecuador's gold output is the least of the South American countries. Copper, recently discovered about 35 miles from the coast, in the province of Azuay, was believed in 1900 to be the most valuable mineral deposit in Ecuador. Manufacturing is unimportant; the only manufactured article exported to any appreciable extent is jipijapa (panama) straw hats. This industry is increasing.

Thoroughly trustworthy statistics of Ecuador's foreign trade are not available; the following figures, however, representing *sucrés*, have been reported:

	1896.	1897.	1898.	1899.
Imports.....	8,520,000	18,004,048	9,870,800	9,870,800
Exports.....	21,862,324	31,025,382	15,094,150	18,021,000

In 1899 Germany received more Ecuadorean exports than any other country, or over one-third the value of the whole; of this amount about three-fourths represented cacao.

Communications.—Ecuador has very few good roads, though numerous valuable improvements were made in 1900. One highway has been constructed for 115 miles from Quito toward Guayaquil, but work on it has for a long time been discontinued. In the agricultural districts west of the Andes communication is effected largely by river navigation. In 1900 for the consideration of \$750,000 the government transferred the title of the railway between Durán (opposite Guayaquil) and Chimbo to the American company that since July, 1899, has had the prolongation of this line to Quito under construction. The entire line when completed will be upward of 350 miles in length, the distance from Quito to Chimbo being about 300 miles, and from the latter town to Durán 58 miles. The Durán-Chimbo Railway will be used in the new road, but it will be practically reconstructed, the gauge being widened to correspond with that of the new line, 42 inches. The engineering difficulties between Chimbo and Quito are very great. Quito is connected by telegraph with Guayaquil and with the republic of Colombia; the telegraph lines in 1898 aggregated 1904 kilometres (1183 miles) and in 1900, 2200 kilometres (1367 miles). A submarine cable touches at Guayaquil.

Religion and Education.—The state church, which is Roman Catholic, receives annual grants from the government, and other churches are excluded. Primary instruction is free and nominally compulsory. Reliable statistics of the primary schools are not available. About 600 students are said to have been enrolled in the schools for higher education when the clerical party was in power, but in 1900 it was reported that the enrolment was 6478, classified as follows: Theology, 379; medicine, 1346; law, 2334; philosophy, 2419. In 1900 the reported number of periodicals and newspapers published was 50, of which Guayaquil had 16 and Quito 11.

History.—On May 5, 1900, an unsuccessful attempt was made to assassinate President Alfaro. The president was unhurt, and his assailant was captured. This was the third attempt to assassinate Señor Alfaro, and the second since he became president. Reports from Guayaquil in June stated that Ecuadorean villages near the boundary of Colombia had been sacked by irregular soldiery of that country.

ECUMENICAL CONFERENCE ON FOREIGN MISSIONS. See MISSIONS, PROTESTANT FOREIGN.

EDDY, MARY BAKER GLASER, author of *Science and Health, with Key to the Scriptures* and founder of Christian Science. See article CHRISTIAN SCIENCE.

EDDY, WILLIAM W., D.D., an American Presbyterian missionary in Syria, died at Beyrout, February 29, 1900, at the age of 74 years. He was born in Pennsylvania, and was educated at Williams College and Union Theological Seminary, New York. After his graduation from the latter institution he studied Arabic and cognate languages, and in 1851 began his work in Syria, where he remained with the exception of the years 1860, 1874, and 1890, when he visited the United States. He was regarded as an able scholar and a successful worker in the mission field. He left unfinished a commentary in Arabic on the Bible, an important work that will probably be completed by his associates in the Beyrout mission.

EDGERTON, SYDNEY, a prominent Ohio lawyer, died at Akron, July 20, 1900, at the age of 72. He was a member of Congress, 1858-60, chief justice of Idaho Territory in 1862, and in the following year governor of the newly organized Territory of Montana. He was one of the founders of the Republican party and a delegate to the Fremont convention of 1856, but during the campaign of 1896 he joined the Free Silver party.

EDUCATION. See the two following articles; **FRANCE** (paragraph Instruction); **PHILIPPINES**, and **PORTO RICO**.

EDUCATIONAL ASSOCIATION, NATIONAL held its thirty-ninth annual convention at Charleston, S. C., in July, 1900. The topics of greatest interest were: *The Small College, its Work in the Past*, President William O. Thompson, Ohio State University; *Its Future*, President William R. Harper, University of Chicago; *The Problem of the South*, Booker T. Washington, principal of the Tuskegee Normal and Industrial Institute; *The Status of Education at the Close of the Century*, Dr. Nicholas Murray Butler, Columbia University, with discussion by President Charles Eliot, Harvard University, and Dr. William T. Harris, United States Commissioner of Education; *Alcohol Physiology and Superintendence*, Dr. W. O. Atwater, Wesleyan University; *Obligations and Opportunities of Scholarship in the South*, President Edwin A. Alderman, State University of North Carolina; *Educational Progress During the Year*, which was the last public address of the late Dr. B. A. Hinsdale, of the University of Michigan. Other papers of unusual value will be found in the various department *Proceedings*, especially in the departments of Normal Schools, Business, Library, Education of Defectives, and Indian Education. The Charleston convention was characterized by the voluntary obliteration by the people of Charleston of the color line in the treatment of members of the association in all meetings of the general association and its seventeen departments, in an absorbing interest in all discussions of southern educational problems, in the enthusiastic reception accorded to Booker T. Washington and his presentation of the *Problem of the South*, and in the cordial hospitality extended to the members from the North; all of which made the meeting one of the most delightful and profitable in the history of the association. The especial work of the year was the printing and distribution of 7000 copies of the annual *Proceedings*, and of many thousand copies of reprints of the reports of special committees made at the last meeting on *The Relations of Public Libraries to Public Schools*; on *Courses of Study in Normal Schools*; and on *College Entrance Requirements*. The recommendations of the last-named report have been the subject of extended discussion in various educational bodies, and have already led to important modifications in the relations existing between secondary schools and colleges, as reported in various college articles of the *YEAR BOOK*. The recommendations which have been most discussed are those favoring elective courses in high schools, a six-year high school course beginning with the seventh grade, the allowing of credit in the college for superior work in secondary schools, intensive study in secondary schools, and increase in the length of the school day in secondary schools. Dr. James M. Green, principal of the State Normal School at Trenton, N. J., was elected president for the year 1900-01. Irwin Shepard, Winona, Minn., is the permanent secretary of the association. Detroit, Mich., has been selected as the place of meeting for the fortieth annual convention, to be held July 8-12, 1901. The association has nearly 3500 active (permanent) members, and an average annual membership of about 8000. It has a permanent invested fund of \$88,000.

EDUCATION IN THE UNITED STATES. The present article deals briefly with some of the principal topics of an educational interest discussed during the year. Paragraphs on education in foreign countries will be found in the articles on the countries themselves, and a specific record of the progress of higher education in the United States will be found in the article **UNIVERSITIES AND COLLEGES**.

Status of Education at the Close of the Century.—The status of education in the United States at the close of the nineteenth century was the subject of a number of monographs written by persons eminent in the educational world, and collected and edited by Professor Nicholas Murray Butler, of Columbia University (*Education in the United States, a Series of Monographs Prepared for the United States Exhibit at the Paris Exposition, Albany, N. Y., 1900*). The introduction by Professor Butler points out in a striking manner the essential features of education in the United States, . . . its spontaneity, the liberality of States and of individuals in giving funds for the founding and maintenance of educational institutions; the inverse ratio of education and of crime and the interdependence of education and industry, the literature of education, including three hundred periodicals and many books and reports annually devoted to the various branches of education. The study of education is commented on in the following words:

"Education, conceived as a social institution, is now being studied in the United

States more widely and more energetically than ever before. The chairs of education in the great universities are the natural leaders in this movement. It is carried on also in normal schools, in teachers' training classes, and in countless voluntary associations and clubs in every part of the country. Problems of organization and administration, of educational theory, of practical procedure in teaching, of child nature, of hygiene and sanitation, are engaging attention everywhere. Herein lies the promise of great advances in the future. Enthusiasm, earnestness, and scientific method are all applied to the study of education in a way which makes it certain that the results will be fruitful." Among the papers of importance of general interest which fill the two volumes of the work may be mentioned *Educational Organization and Administration*, by President A. S. Draper, of the University of Illinois; *Kindergarten Education*, by Susan E. Blow; *Elementary Education*, by W. T. Harris, United States Commissioner of Education; *Secondary Education*, by Professor Elmer E. Brown, of the University of California; *The American College*, by Professor A. F. West, of Princeton; *The American University*, by Professor E. D. Perry, of Columbia; *Education of Women*, by President M. Carey Thomas, of Bryn Mawr; *The Training of Teachers*, by Professor B. A. Hinsdale (deceased 1900), of the University of Michigan; *School Architecture and Hygiene*, by Gilbert B. Morrison; and ten other monographs on special topics, such as professional, scientific, technical, agricultural, commercial, art and industrial education; summer schools and university extension; the education of the negro, and the Indian, and of defectives; and scientific societies and publications.

The Paris Exposition.—The exhibit of the United States at the Paris Exposition was more comprehensive and effective than that of any other country except France itself. The cost of the United States exhibit was over \$80,000, of which the State of New York contributed \$10,000 and the city of New York the same amount. A unique feature of the New York State exhibit was a series of kinetoscope pictures of a fire drill in one of the public schools of New York City. Moving pictures of other forms of school activity, such as the raising of the Stars and Stripes, were accompanied by a phonographic rendering of the songs sung by the children.

Elective Studies.—A topic which was much discussed during the year was that of elective studies, both in college and in the high school. Notable among the opponents of the elective system was Professor H. Münsterberg, whose article *School Reform*, in the *Atlantic Monthly* for May, contained the statement that elections by the pupil or student are not a voluntary choice, but "express the cumulation of a hundred chance influences." At the annual meeting of the Association of Colleges and Preparatory Schools of the Southern States considerable time was given to discussion of the question, among the papers read being *Limited Election in High School Work*; *Some Problems of the Elective System*; *The Proper Limitation of Elective Work in School and College*; *The Proper Limitations of the Elective System of College Studies*. For further discussion, see UNIVERSITIES AND COLLEGES (paragraph Elective System).

Secondary Schools.—Salient points in the history of secondary education during the school year ending July, 1900, were the attempts in several States to reorganize the school administration. In Boston, two bills, one for the reconstitution of the school committee and the other to form a schoolhouse department, were defeated. A law was enacted calling for a State superintendence in all towns and cities in Massachusetts. In New York (see New York) the Davis law, signed in May, created a revolution in the educational conditions; and the unification of the educational interests of the State would have been attained by the recommendations of the committee appointed by the governor but for the fact that no agreement could be reached as to the appointment of the head of the State educational system. The schools of Baltimore were reorganized by the new charter of that city, which went into effect March 1, 1900. A central board of education takes the place of the ward system formerly in vogue. In Chicago, the Board of Education founded a department of child study and pedagogical investigation, including a director and assistants, who are to make "such psychophysical and allied investigations having a pedagogical bearing as may be suggested by the director and approved by the superintendent of schools and the committee in charge of the work, and also to give such instruction to the principals and teachers in the schools as may be directed by the superintendent of schools and the committee." The first work of this department was a research upon the sight and hearing of the pupils of the public schools.

Expedition of Cuban Teachers.—An event which has been characterized as "unique in the history of education" was the action of Harvard University in opening her doors in the summer of 1900 to nearly 1300 Cuban teachers, at the request of A. E. Frye, Harvard, '90, superintendent of public instruction in Cuba. Mr. Frye gained the co-operation of the Washington government, while Harvard agreed to provide instruction and entertainment, and raised by subscription the sum of \$71,145.33. The embarkation of the Cuban teachers took place at fourteen different

ports on the north and south sides of the island, and began on June 22, the expedition being carried to the United States on five army transports. The exact number of teachers was 1273, or 40 per cent. of the whole Cuban teaching force. Sixty per cent. of the delegation were women. The plan for instruction at Harvard comprehended (1) two lessons a day in English; (2) a course of eighteen lectures in Spanish on physiography, illustrated by as many excursions to different points of geographical interest in the neighborhood of Boston; (3) two courses of lectures in Spanish on historical subjects—one on the history of the United States, the other on the history of the Spanish colonies in North and South America; and (4) lectures on free libraries, on the organization of the American schools, and on imitation and allied faculties in children. Through special gifts received from Mrs. Quincy A. Shaw, a course of illustrated lectures on the kindergarten was provided for the Cuban women teachers, and a workshop course on American sloyd for a selected number of Cuban men. In regard to the character of the Cuban delegation, it was the opinion of the Harvard authorities that the selecting bodies in Cuba had selected too many elderly people, who were, of course, incapable of learning English, or indeed of absorbing readily new ideas. About 10 per cent. of the men were over 44 years of age, and about 10 per cent. of the women were over 38. To the Cuban authorities, however, it may have seemed expedient to select some persons of influence or high standing in their several communities, whose presence would be a safeguard for the younger members, and who would be able to impress their views on their own people after the return of the expedition. The party spent six weeks and a half in Cambridge, and the total cost, including instruction, entertainments, board and lodging, transportation on excursions, medical care, and the cost of clerks, guides, chaperons, and interpreters, was \$68,105. One month's salary was paid to the Cuban public school teachers while they were in Cambridge. There were 1181 of them, the remaining 92 being teachers in the University of Havana and the institutes, private school-teachers, and Cuban chaperons and interpreters, together with three physicians and two priests. The success of the whole undertaking, according to one writer, was diminished if not altogether nullified by the lack of interest and attention on the part of the Cuban teachers, who are said to have regarded the expedition as a picnic on a large scale. The opinion of the Harvard authorities is, however, much more worthy of consideration and is, that the expedition fulfilled to a remarkable degree the enthusiastic expectation of good expressed by the originators of the plan, and that the good bids fair to be abiding. President Eliot expressed his view of the results of the expedition as follows: "The chief result of the expedition was the opening of the minds of these 1300 intelligent people to a flood of new observations and new ideas. There was a great diversity among them as regards education and capacity. As General Wood said in a letter written from Havana on the 24th of February to Major Henry L. Higginson, 'You will find all classes among them, from the highly educated to those of very limited education; but they are all enthusiastically interested in educational matters, and to these people and to the children they are teaching we must look for the Cuba we hope to build up. These men and women will come back to Cuba with very many new ideas and very much better fitted to teach.' A fair proportion of them learned much English, and got a new conception of science teaching and history teaching; but many of them were too old to learn a new language, or, indeed, to acquire much intellectual training of any sort; yet all saw with their eyes the American ways of living, and the outside at least of many American institutions, such as schools, hospitals, asylums, libraries, churches, and theatres. They made two voyages on the ocean, they had a hasty view of New York, Philadelphia, and Washington; they caught a glimpse of the country on their rides through New Jersey, Pennsylvania, and Maryland, and they became well acquainted with Cambridge and the neighborhood of Boston, from Marblehead on the one side to Point Allerton and Nantasket on the other. They came in contact with a considerable number of American educated young people, and found them serviceable, cordial, and friendly. When the expedition was about to leave Cambridge for the fortnight's journey, the Cubans wished to have the young men who had worked for them and with them in Cambridge accompany them on their journey, and Superintendent Frye so arranged it; and it was with real regret that the guides and the guided parted at Philadelphia, whence the transports sailed for Cuba."

An Educational Experiment.—The Chicago University Elementary School, established in 1895, has since attracted considerable attention. (See *A New Departure in Education*, in *Education*, December, 1900.) The school was founded by the university to carry out the plans of John Dewey, head professor of philosophy, and has been called both an educational experiment station and a laboratory of education. The aim and plan of the school are outlined in Professor Dewey's book, *School and Society* (Chicago, 1900). He maintains that the common school is isolated from

society in that the child cannot apply out of school the knowledge he learns in school, and *vice versa*. Therefore, Professor Dewey's school aims to bring the two worlds, the school world and the world of society, as near together as possible. This can be done in training the child's mind by means of the occupations of daily life. Thus, both boys and girls learn cooking, sewing, weaving, and carpentry; while history, mathematics, and foreign languages are given only incidentally. Professor Dewey, in an article, *Psychology and Social Practice*, in the *Psychological Review* for March, 1900, states the theory after which the Chicago elementary school is modelled. He finds that present methods of education are based on two false assumptions: First, that the motives and conditions which evoke mental power are different in the child and in the adult; and second, that the aims and habits of the child are capable of being specialized in the same or nearly the same degree as those of the adult. Professor Dewey further states, in an article, *Psychology of the Elementary Curriculum*, in the *Elementary School Record* for December, 1900, that the working hypotheses of the school which are derived from modern psychology are threefold: (1) Mind as a function of social life; (2) mind as knowledge—i.e., intellect as contrasted with the emotion and endeavor so much accented in modern psychology; (3) mind as process of development; and he finds in childhood three stages of growth: The first from 4 to 8 years, about, marked by the close connection between the sensory and motor sides of the child's life; the second from 8 to 12 years, distinguished by the child's realization of the possibility of objective and permanent results of his activity; the third from 12 years to the time when the child begins his secondary education. The relations between these three stages of growth have been worked out experimentally in the Chicago Elementary School with the following results: (1) "That it is possible, in early years, to appeal, in teaching the recognition and use of symbols, to the child's power of production and creation; and that there is the advantage of a limited and definite result by which the child may measure his progress. (2) Failure to sufficiently take account of this fact resulted in an undue postponement of some phases of the lines of work, with the effect that the child, having progressed to a more advanced plane intellectually, feels what earlier might have been a form of power and creation to be an irksome task. (3) There is a demand for periodic concentration and alternation in the school programme of the time devoted to these studies and of all studies where mastery of technique or special method is advisable."

Statistics.—There were in the United States in 1900, 245,000 public schoolhouses, 418,000 public school teachers, and 15,700,000 public school pupils, and \$203,000,000 was expended for public instruction. Public school statistics have never been reliably collected in detail for the whole country in such a manner as to be available at or near the close of the year. At the 1900 meeting of the National Educational Association a report was read by James M. Greenwood on *High School Statistics*, covering (1) enrolment of pupils; (2) the number of first-year pupils, classified by age; (3) the total number of first-year pupils that failed to maintain class standing in one or more branches; and (4) the number and ages of first-year pupils that were dropped from school during the current year and the reasons for their leaving school. The statistics covered a total enrolment of 12,542, of which 6804 were first-year pupils. Of the 1015 pupils who left school, by far the greatest number for whose departure the reason was known left to go to work, inability to do the work and sickness being almost as numerous. The general conclusions from the statistics collected were (1) that young children who finish grammar school work and go then to the high school are least likely to fail in studies or leave school; (2) that older pupils are most likely to fail or leave during the first year; (3) that failures to do the work are greatest in mathematics, next in English, ancient and modern languages, natural sciences, and history, in the order mentioned; (4) that a seven-years' course of elementary study will send one-third to one-half more pupils to high school than a nine-years' course, and that the preparation is as good for children entering elementary schools over six years of age; and (5) that the pupils continuing the high school course for two years are in general likely to finish the course.

The relations of the secondary schools to the colleges, involving questions relating to the improvement of the curriculum of the high school; the co-ordination of its work with that of the under-class work of the college; the eligibility of its graduates for entrance into college; the comparative value of entrance examinations and entrance on certificate; and some similar questions, including that of uniform college entrance requirements, will be found discussed in the article **UNIVERSITIES AND COLLEGES**.

The following books on the various topics of education have appeared during 1900: *Education and Life*, by J. H. Baker (New York); *Work and Play*, by J. E. Bradley (Boston); *Education and the Philosophical Ideal*, by H. W. Dresser (New York); *Educational Aims and Methods*, by Sir J. G. Fitch (New York); *The Making of*

Character, by John MacCunn (New York); *Imitation in Education*, by J. N. Deahl (New York); *Interest in its Relation to Pedagogy*, by Wilhelm Ostermann, a translation (New York); *A History of Education*, by Thomas Davidson (New York); *Pestalozzi: His Life and Work*, by Roger de Guimps (London); *Education in the United States*, edited by N. M. Butler (Albany, N. Y.); *The Art of Study*, by B. A. Hinsdale (New York); *Thinking and Learning to Think*, by N. C. Schaeffer (Philadelphia); *Systematic Methodology*, by A. T. Smith (New York); *School Sanitation and Decoration; a Practical Study of Health and Beauty in their Relations to the Public Schools*, by S. Burrage and H. T. Bailey (Boston); *School Gymnastics with Light Apparatus*, by J. H. Bancroft (Boston); *Tuskegee; Its Story and its Work*, by M. B. Thrasher (Boston); *Nature Study and the Child*, by C. B. Scott (Boston); *Teaching of Elementary Mathematics*, by D. E. Smith (New York); *The American Public School*, by John Swett (New York), and the *Addresses and Proceedings of the National Educational Association*.

EDWARDS, THOMAS CHARLES, M.A., D.D., biblical scholar and principal of Bala (North Wales) Theological College, died at Bala March 22, 1900. Born at Bala September 22, 1837. he was educated in that town and at University College, London, and Lincoln College, Oxford. He entered the Presbyterian ministry in Wales, and from 1867 to 1872 had a pastorate in Liverpool. He became well known as the first principal of the University College of Wales, Aberystwith, acting as such from 1872 to 1891. In the latter year he accepted a call to the principalship of Bala Theological College, of which his father, Dr. Lewis Edwards, was the founder and for fifty years the principal. He was a man of high scholarship, standing second only to the late Professor Jevons in the examination for his degree of Master of Arts at London, and he was a leader in the movement for higher education in Wales. His writings include: *A Commentary on First Corinthians* (1885); *Hebrews* (Expositor's Bible, 1888); *A Welsh Commentary on the Hebrews* (1890); *The God-Man* (1895).

EGLESTON, THOMAS, M.E., Ph.D., LL.D., professor emeritus of mineralogy and metallurgy in the School of Mines, Columbia University, died at his home in New York City January 15, 1900. Born in New York December 9, 1832, he graduated at Yale in 1854, and six years later at the École des Mines, Paris. From 1861 to 1864 he was in charge of the laboratory and mineralogical collections in the Smithsonian Institution at Washington. In the latter year, after securing the approval of the board of trustees of Columbia College and of the president, the late Dr. Charles King, Egleston founded the School of Mines, in which he was professor of mineralogy and metallurgy until 1897 and thereafter professor emeritus. He was one of the founders of the Society of Mechanical Engineers, the Society of Mining Engineers, and the American Meteorological Society, and was a member of various other scientific organizations. In 1868 he was appointed a United States commissioner to examine the coast fortifications, and in 1873 was a juror at the Vienna International Exposition. He was made a chevalier of the Legion of Honor of France in 1890 and an officer in 1895. Besides more than one hundred monographs on the metallurgy of various metals, he wrote: *Tables for the Determination of Weights, Measures, and Coins in the Metric and English Systems*; *Lectures on Mineralogy* (4 vols.); *The Metallurgy of Gold*; *The Metallurgy of Silver*; *The Life of Major-General John Paterson of the Revolutionary Army*; *The Life of Major Egleston of the Revolutionary Army*.

EGYPT, a country of northeastern Africa, though nominally under the suzerainty of Turkey, is financially and in other ways practically under the protection of Great Britain. The capital is Cairo.

Area and Population.—The total area of Egypt proper—that is, exclusive of the Egyptian Soudan—is about 400,000 square miles, and the population, which at the beginning of the century was estimated at 2,460,000, had increased, according to a British census, to 9,734,000 in 1897. Of these, about 574,000 were nomads and over 112,500 foreigners. The latter class was represented by 38,000 Greeks, 24,500 Italians, 19,500 British, 14,000 French, and about 16,500 of other nationalities. According to the census of 1882, the population was 6,814,000. Excepting oases and the land watered by the Nile overflow the country is arid; the Nile Valley and the delta, however, comprising less than 13,000 square miles, are remarkably fertile, and continue to support the large population in increasing prosperity. The populations of the principal cities are: Cairo, 570,000; Alexandria, the chief commercial centre, 320,000; Tantah, an inland delta town, 57,000; Port Said, 42,000; Assiut, 42,000; Zagazig, 36,000; Mansourah, 36,000; Fayoum, 33,000; Damietta, 31,000; Keria, 27,000; Suez, 17,000. Of the total population of Egypt proper about 92 per cent. is Mohammedan, 7½ per cent. Christian, and one-fourth of one per cent. Jewish. Ex-

cepting the foreigners, all but about 8 per cent. of the inhabitants over 7 years of age are illiterates. In 1898 there were about 10,000 schools in the country, with 17,000 teachers and 228,000 pupils. At the Moslem Mosque and University of El Azhar in Cairo the subjects taught and the pedagogic methods have not changed since it was founded about a thousand years ago.

Government and Finance.—The ruler of the country is the khedive, who is assisted by a cabinet of six ministers. The present khedive, Abbas Hilmi, succeeded to the throne upon the death of his father in 1892. The legislative council, which is little more than an advisory body, consists of 30 members, 14 of whom are nominated by the government. The general assembly, which comprises the members of this council, the 6 ministers and 46 members elected by the people, also has no legislative power, but its consent is necessary to the enactment of new laws for direct taxes on land and personalty. The final legislative authority is the khedive and his ministers. The khedive has a yearly allowance of about \$486,000. Egypt is divided into six districts, administered by governors. There are four judicial systems: the courts of the religious law of the Mohammedans; the native courts, which deal with civil actions between natives and with crimes by natives; consular courts, which are established for the trial of foreigners accused of crime; and the mixed tribunals, instituted in 1875, which have jurisdiction in civil actions between persons of different nationalities and, to some extent, in criminal actions against foreigners. On January 30, 1900, the khedive signed a decree prolonging the existence of the mixed tribunals for five years from the first of the following month. In the latter part of 1899 and in 1900 apparently the relations between the khedive and the British authorities in Egypt increased in friendliness.

In 1882 a rebellion in Egypt led Great Britain to intervene and re-establish the authority of the khedive. The following year an English financial adviser was appointed, without whose consent no measures of finance can be enacted. This adviser was Lord Cromer, who still continues in office, and though he is not recognized as an executive officer and has the title of consul-general, he is practically the governor-general of the country. Under him Egypt has emerged from a wretched financial condition to a state of solvency and prosperity. The chief sources of revenue are the land tax, the tobacco monopoly, and the customs; the principal items of expenditure are the service of the public debt and internal administration. The consolidated debt in 1898 amounted to £E.95,555,000. For several years the receipts have exceeded the expenditures, and in 1900 the aggregate surpluses accumulated for the commissioners of the debt amounted to £E.7,495,000 (the Egyptian pound is worth \$4.9976). In a certain sense this sum is a sinking fund, but it is not actually applied upon the debt, and the strange procedure obtains of interest being paid thereon. Lord Cromer speaks of this arrangement as an "artificial system of finance originating under circumstances long since obsolete;" such a safeguard certainly seems unnecessary in a country that without difficulty raises a revenue 10 per cent. in excess of its expenditure. The revenue for 1899 amounted to £E.11,415,000, and the expenditure, including £E.759,000 paid over to the commissioners of the debt was £E.11,013,000, the surplus, accordingly, being £E.402,000. This amount of revenue, which was the greatest recorded since British occupation began, was reached—as the London *Times* remarked in commenting on Lord Cromer's report—"notwithstanding a long series of fiscal changes relieving the burdens of the taxpayers, changes which would never have been made by native rulers, and many of which would hardly have been made by any people less convinced than ourselves [Englishmen] of the soundness of the group of economic principles connoted by the term free trade. There is no room for doubt that the Egyptian treasury has derived no less advantage than the population from these remissions and rearrangements of taxation." Lord Cromer reported: "Customs, railways, stamps, the post-office—in fact, all the heads of revenue which increase with the growing prosperity of the country—show a satisfactory degree of expansion and elasticity." These conditions are particularly noteworthy in view of the fact that the Nile in 1899 was perhaps the lowest on record—a thing that in former days would have meant famine and plague. This report also deals at some length with the measures that have recently been taken to protect the fellaheen (peasants) from the extortionate usury of the Oriental money-lenders. Large numbers of the fellaheen "are hopelessly in debt and are consequently deprived of proper incentives to industry. Though the highest rate of interest allowed by law is 9 per cent. . . . the usurers find means to charge what they please when once they get the poor cultivators in their power. Forty per cent. seems to be their ordinary remuneration, and even this figure is probably exceeded in many cases. The government tried the experiment of making small loans at a low rate of interest, though without any intention of permanently embarking upon business of this kind. The experiment proved sufficiently successful to induce the government to transfer its management to

the National Bank. It has authorized the bank to charge 1 per cent. commission in addition to the legal 9 per cent., so that any cultivator who has not actually ruined himself may raise money at 10 per cent. to pay off a debt costing him at least 40. The natives appear to appreciate the system, which, in response to urgent applications, is being extended." As even 10 per cent. seems a rather high rate of interest, it should be said that this rate is necessary to insure merely a fair margin to the bank and to protect it from insolvency that otherwise would be caused by those fellahen who fail to meet their obligations. Lord Cromer is careful to insist that the system is still experimental.

The latest budget reports are as follows:

	1900.	1901.
Total receipts.....	£E.10,700,000	£E.10,700,000
Total expenditure.....	10,541,000	10,636,000
Actual receipts.....		£E.10,484,000
Amount taken from reserve to diminish taxes.....		216,000
		£E.10,700,000
Actual expenditure.....		9,823,000
Guaranteed debt sinking fund.....		63,000
Paid to economic fund.....		265,000
General reserve for surplus receipts.....		485,000
		£E.10,636,000

The surplus for 1901 is £E.549,000; taking from this the £E.485,000 to be paid to the reserve fund, £E.64,000 are left to the disposal of the Egyptian government. The principal feature of the budget for 1901 is a reduction of river navigation receipts by about £E.130,000, by abolishing lock dues for passing under river railway bridges. This action, which is a great assistance to the river boatmen, "redounds greatly to the credit of the financial authorities."

Army.—In September, 1882, the Egyptian army was disbanded by a decree of the khedive, and in the following December the organization of a new army was undertaken by a British officer, who was given the title of Sirdar. The present sirdar is General Sir Reginald Wingate, who succeeded General Lord Kitchener in December, 1899. The total strength of the Egyptian army is about 18,000; about 100 of its officers are Englishmen. Since 1882 the British army of occupation has remained in the country; its present strength is about 5500. For the maintenance of this force the Egyptian government makes an annual contribution of £87,000.

Industries and Commerce.—The principal industry is agriculture, made possible by the Nile overflow, of which the farmers, especially in Lower Egypt, take advantage by means of a system of irrigating canals. The important crops include cotton, sugar, rice, various vegetables, corn, wheat, barley, millet, and clover. The area under corn is about 1,592,000 acres; wheat, 1,262,000 acres; cotton, 906,000 acres; sugar-cane, 67,000 acres. In 1897 the sugar crop amounted to 3,604,503 tons (of 2000 pounds). The cotton produced in the year 1897-98 amounted to 323,885 tons; in 1898-99, 276,646 tons. There are about 4,500,000 date trees yielding fruit or seed. Cattle and other farm animals number about 1,670,000. During the year 1900 much progress was made on the dams across the Nile at Assouan and Assiut, the low water of the river in the winter of 1899-1900 making possible more work than was anticipated. The construction of the dams is under the direction of Sir Benjamin Baker, and at times over 20,000 people have been employed on the undertaking. The Assiut dam is intended to store and thus raise the level of the water during the summer, so as to benefit Middle Egypt and Fayoum, while the dam at Assouan will be located at the cataract and will be built on the granite of which the reefs are composed. As there will be a head of 46 feet of water at the latter dam, considerable power will be developed, and this fact in connection with the benefits to be conferred by the irrigation makes the scheme of interest from an economic as well as an engineering standpoint. The dam is being constructed by Messrs. John Aird & Company under the terms of a contract that provides for the payment for the work in annual instalments of £160,000, beginning at the completion of the dam and extending over some thirty years. So vigorously has the work been prosecuted that its completion a year earlier than the time specified in the contract, July 1, 1903, is expected. There will be locks and canals, so that the dams will not interfere with navigation, while ample sluiceways will permit the escape of water during the flood.

The foreign trade, exclusive of specie, has been reported as follows:

	1896.	1897.	1898.	1899.
Imports.....	£E.9,828,604	£E.10,603,672	£E.11,033,219	£E.11,441,802
Exports.....	13,232,108	12,321,220	11,805,179	15,350,908

Trade with countries commercially the most important was as follows in 1898 and 1899:

	Imports to Egypt.		Exports from Egypt.	
	1898.	1899.	1898.	1899.
Great Britain.....	£E.3,872,452	£E.4,334,026	£E.5,523,204	£E.8,227,275
Turkey	1,701,934	1,643,224	390,651	339,821
France and Algeria.....	1,069,532	1,060,341	1,129,302	1,366,777
Austria-Hungary	746,050	735,296	413,149	579,001
Belgium	572,704	626,405	30,933	59,258
British colonies in Far East..	588,501	611,438	29,741	71,630
Italy	500,948	558,871	361,379	445,499
Russia	471,475	430,023	1,859,946	1,255,329
Germany	316,127	350,204	481,420	578,908

Trade with the United States, expressed in dollars (the dollar is practically one-fifth of the Egyptian pound), has been for years ending June 30:

	1897.	1898.	1899.	1900.
Imports from United States.....	\$323,761	\$816,915	\$494,196	\$1,095,613
Exports to United States.....	7,027,005	5,017,707	7,489,929	8,278,022

About nine-tenths of the imports and almost all of the exports pass through the port of Alexandria. The principal imports are cotton textiles (valued at £E.1,610,399 in 1898), provisions, iron and steel goods, coal, tobacco, and alcoholic liquors. Of the exports, about 85 per cent. is cotton and cotton seed; the value of the raw cotton exported in the year 1897-98 was £E.9,040,150; in 1898-99, £E.11,598,222. Other exports are sugar, wheat, corn, gums, hides, barley, cigarettes, and ivory.

Communications.—In 1899 there were reported 1268 miles of railway in Egypt, of which 1166 miles were owned and operated by the state and 72 miles by private companies; 815 miles were in the Delta. In addition is the Nile Valley railroad to Khartoum, in the Egyptian Soudan, which increases the total length to 1796 miles. The first train from Wady Halfa reached Khartoum on January 26, 1900. Besides the lines already mentioned, there are 390 miles of "agricultural railways" in the Daira Sanieh estates, and a considerable mileage is under construction or projected. In particular should be mentioned the proposed branch line from Berber on the Nile to Suakin on the Red Sea. In 1899 the railway receipts amounted to £E.2,112,065, the largest amount yet attained, and the working expenses, £E.950,429. According to a report published in 1900, it would seem that railway progress has hardly kept pace with the general prosperity of the country. In 1899 there were 2105 miles of telegraph line, with 9364 miles of wire, owned by the government. There are 290 post-offices and 25 "travelling offices;" in addition the rural post has been established in over 525 localities. About three-tenths of the foreign correspondence is with Great Britain. The Suez Canal is treated under its own title. See COLONIES and ARCHÆOLOGY.

The Egyptian Soudan.—In accordance with a convention signed in January, 1899, by representatives of the British and Egyptian governments, the administration of the Egyptian Soudan, which was regained to Egypt by the victory of the Anglo-Egyptian army, commanded by General Kitchener over the Dervishes at Omdurman in September, 1898, is placed with a governor-general, appointed by Egypt with the assent of Great Britain. General Kitchener, who was sirdar of the Egyptian army, was made governor-general of the Soudan; and upon his appointment as chief-of-staff to General Lord Roberts in South Africa he was succeeded in both positions on December 23, 1899, by General Sir Reginald Wingate. The convention mentioned above provides that the British and the Egyptian flags shall be used together in the Soudan; that imports from Egypt proper shall be free of duty, and that imports from other countries shall not be taxed more heavily than similar imports to Egypt; and that the importation or exportation of slaves shall not be permitted. The northern boundary of the Soudan follows the 22d parallel of north latitude, which crosses the Nile near Wady Halfa. Southward from this parallel the country extends a distance of, perhaps, 1400 miles to Uganda, the total estimated area being 950,000 square miles. On the east the Egyptian Soudan is bounded by the Red Sea, the Italian colony of Eritrea, and Abyssinia, and on the west by French Sahara and French Congo. The cost of administration is largely borne by the Egyptian govern-

ment. The estimated revenue for 1900 was £E.158,000, and the estimated expenditure £E.575,000; the deficit of £E.417,000 is charged to Egypt.

The Soudan has not yet recovered from Dervish oppression. A large amount of cultivation and trade have been abandoned, and wide areas of the country depopulated; but reconstruction is progressing, though against unavoidable difficulties. The capital, Khartoum, which a short time ago was a mass of ruins, has been largely rebuilt, and in 1900 was described as "a city of broad streets and handsome buildings, of tramways, and electric lights." The Gordon Memorial College, founded there by General Lord Kitchener, has been erected; and on May 6, 1900, Mr. J. Currie was appointed director of education in the Soudan and master of the college. In contrast to Khartoum is El Obeid, which was the capital of Kordofan and had a population upward of 30,000. Upon its reoccupation in December, 1899, it "was found to be entirely deserted save for a single leopard, who sat upon the ruins of the principal well." During 1900 the *sudd*, a thick tangle of floating vegetation, which made navigation impossible, was cut out over a distance of some 200 miles on the White Nile sufficiently to establish river communication, except at the rapids, with Uganda.

On November 25, 1899, a column of troops, commanded by General (then Colonel) Wingate, came up with the khalifa, who had under him most of the remaining belligerent Dervishes, and defeated his forces, many of whom were captured near Gedil, about 170 miles south of Omdurman. The khalifa himself was killed, but Osman Digna escaped. The relatives and immediate followers of the mahdi and the khalifa were imprisoned at Rosetta. Most of the other captive Dervishes were disarmed and pardoned, but separated as far as possible from each other. This victory was sufficient to warrant the opening of the Soudan for general traffic on December 12, 1899. On January 19, 1900, General Wingate captured Osman Digna in the hills near Tokar, and two days later he was sent to Suakin. He was the last of the khalifa's emirs, and had long been regarded as one of the ablest opponents of Great Britain and Egypt in the eastern Soudan. He was, indeed, a man of unusual military ability. It is said that he was born in Paris of French parents, was adopted by a Mohammedan merchant of Alexandria, and was educated in the Cairo military school. On February 1 it was reported that when ordered to return their ball cartridges two battalions of native troops, garrisoned at Omdurman, refused to obey. It appeared that some of the native officers were desirous of stirring up trouble against Great Britain in favor of France. In the latter country there was a strong tendency to give undue significance to the incident.

ELBE-TRAVERSE AND ELBE RHINE CANALS. See GERMANY.

ELECTRIC CARRIAGES. See AUTOMOBILES.

ELECTRICAL ENGINEERING and INDUSTRY. The field of electrical engineering and industry is so broad and the developments in it are so active, that only the briefest mention is possible of the work of 1900. As indicating the capital investment in electrical undertakings the following figures covering the United States are interesting: Telegraphy, \$250,000,000; telephony, \$300,000,000; electric lighting, \$1,200,000,000; electric railways, \$1,800,000,000; electric mining, power transmission, deposition and plating, \$250,000,000; electric manufacturing, \$150,000,000; automobiles and storage battery, \$25,000,000; grand total, \$3,975,000,000. The capital involved in electrical undertakings in the United Kingdom is stated at £123,636,602 by London *Engineering*. These figures are fair indications of the immensity which the electrical industry has attained. Turning now to the developments of 1900, several undertakings deserve especial mention. In America the Niagara Falls works have increased their capacity during the year by the addition of four new 2500 horse-power turbines, and the large power plant at Massena, N. Y. (see WATER POWER), was nearly completed. Large steam power plants were in progress of construction for the Boston Elevated Railway in Boston, and the Manhattan Elevated Railway in New York. These are but isolated examples of the electrical undertakings which have been under way in America during the year, and which in the rapid development of electric lighting and power in this country excite only passing comment. In some respects the most notable feature of electrical development during 1900 was the increased activity of foreign countries in electrical enterprises. A few of these foreign undertakings may be mentioned as examples. At Elberfeld, in Germany, it is worth noting that a plant has been installed in which a Parsons steam turbine is coupled directly to a 1000-kilowatt dynamo producing three-phase current at 4000 volts with 50 periods. At Chevre, near Geneva, the water power of the Rhone was still further utilized during 1900, and there are now ten 1200 horse-power turbines each driving a two-phase generator. At St. Petersburg, Russia, three companies began construction on electric-lighting

plants. At Prague a large station was opened during the year to supply electric power and light. In Italy a great deal of notable work was done. A large water-power station was built at Paderno, on the River Adda, and current is transmitted to Milan, a distance of about 20 miles. The energy is generated at 13,500 volts on the three-phase system without using slip-up transformers, and the output is 13,000 horse-power. This current is used both for lighting and for working street railways. Another station developing 12,000 horse-power on the three-phase system at 3600 volts was built at Porta Valta and is worked by steam. Still another notable Italian installation was the equipment of the 65-mile railway between Lecco and Sondrio with electricity. In England, it is important to note that all the London underground railways have been or are soon to be equipped with electric power, or experiments are in progress with this object in view. In Paris, about 9 miles of the metropolitan underground rapid transit system were opened for traffic with electric traction. (See RAPID TRANSIT.) In Switzerland, the Burgdorf-Thun Railway, 25 miles long, was completed, and is to be operated by polyphase current without transformation into direct current.

ELECTRICAL ENGINEERS, AMERICAN INSTITUTE OF, at the close of the fiscal year, April 30, 1900, reported a total membership of 1183, a net gain of 45. There were 5 deaths during the year, and 16 resignations were received. The treasurer's report showed a cash balance on hand of \$7461.56. The institute holds monthly meetings at 12 West Thirty-first Street, New York City, and prints its transactions monthly. On August 16, 1900, the institute held a joint meeting with the British Institution of Electrical Engineers at Paris. President, Carl Hering, Philadelphia, Penn.; secretary, Ralph W. Pope, 26 Cortlandt Street, New York City.

ELECTRICITY. See PHYSICS.

ELECTRIC STREET RAILWAYS. The extension of the electric railway both in city and country continues without abatement, and this form of motor power seems destined to supplant all others for urban and interurban traffic. Particularly is this the case in the United States, where the mileage of cable and horse-car lines is steadily decreasing, while that of electric railways shows a constant and remarkable increase. Considering the statistics of electric street railways, the first point of interest is the decrease in the number of companies recorded annually with an increase in the mileage of railway under operation. This is explained by the tendency toward consolidation which has been and is still being shown among the various railway companies. In this way the expense of supervision and maintenance can be decreased materially. In 1899 there were in the United States 871 street railway companies operating a total mileage of 19,213 miles, and in Canada 38 companies with 761 miles of track. In 1898 there were 954 companies in the United States and 37 in Canada operating 17,549 and 673 miles of track respectively. In 1897 there were 953 companies with 15,718 miles of track in the United States, and 30 companies with a mileage aggregating 462 in Canada. The increase in mileage during 1899 over that of the previous year was 1664, or 9.5 per cent., in the United States, and 88 miles, or 11.6 per cent., in Canada. The distribution of this increase among the various States by groups was as follows: New England States, 364 miles, or 13.8 per cent.; Eastern States, 431 miles, or 7.4 per cent.; Central States, 896 miles, or 15.8 per cent.; and Southern States, 21 miles, or 1.7 per cent. The Western States show a decrease of 48 miles, or 2.1 per cent. The extent to which electricity is supplanting other modes of traction may be appreciated when we consider that while there was an increase of 2027 miles, or 12.7 per cent., in the length of track of electric railways, there was a decrease of 46 miles, or 12.2 per cent., in the mileage of cable railways, of 235 miles or 36.1 per cent., in the extent of horse railways, and of 83 miles in the mileage of lines using other sources of motive power. The equipment of the railways has been greatly increased during the year, and the tendency is to use larger cars with an increased carrying capacity. This has necessitated the abandonment of many old cars, which were replaced with new without greatly increasing the total number included in the aggregate equipment. The immensity of the street railway business is shown by the statement that the capital liabilities of the various companies in the United States at the close of the year 1898 amounted to \$1,621,820,000, while the total earnings for that year are estimated at \$175,000,000. As may be seen from the appended table, the amount of the capital stock and bonds in 1900 show an increase over these figures, but it must be remembered that with many electric railways the stock has been given away with the bonds in order to promote the investment of capital. The financial condition of the street railways can be readily appreciated by a glance at the accompanying table, in which the amount of the capital stock and funded indebtedness of the railways in each State is given.

STATISTICS OF TRACK MILEAGE, CAPITALIZATION, AND CAR EQUIPMENT OF STREET AND ELEVATED RAILWAYS IN THE UNITED STATES AND CANADA.

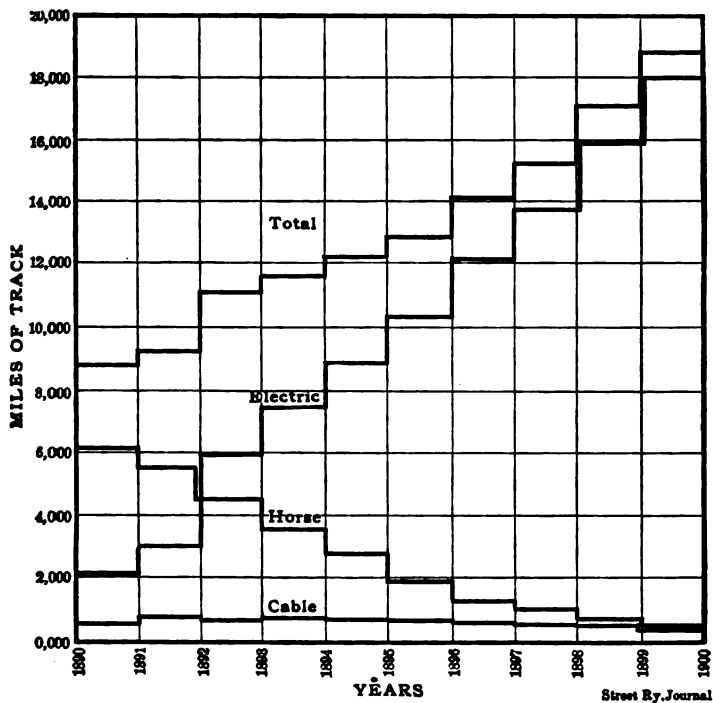
(Compiled from a statistical statement in the *American Street Railway Journal* for June, 1900. The figures represent the condition of the various railways on December 31, 1899.)

STATES.	MILEAGE OF ROADS.					Capital stock.	Bonds.	CARS.						
	Electric.	Cable.	Steam or misc.	Horse.	Total.			Electric.		Cable.		Horse.	Miscellaneous (including engines, etc.).	Total.
								Motor.	Trail.	Grip.	Trail.			
Alabama.....	128		66	10	204	\$4,210,000	\$3,177,000	170	89			14	87	360
Arkansas.....	42		5	8	55	1,393,950	1,313,000	72	33			12	7	124
California.....	627	97	80	63	867	45,111,990	25,940,800	893	135	649	60	160	126	1,983
Colorado.....	177	30	21	6	234	8,203,000	6,564,000	250	194	62		3	35	544
Connecticut.....	492				492	12,715,948	10,608,800	936	131					1,067
Delaware.....	43				43	1,020,000	750,000	91	2					93
Dist. of Columbia	227				227	24,475,000	15,345,000	964	29			4	18	993
Florida.....	52		9	5	66	1,131,000	764,300	62	15			4	18	99
Georgia.....	236		5	11	252	5,241,400	6,062,000	847	41			9	12	409
Idaho.....	4				4	54,000		2						2
Illinois.....	1,548	82	11	17	1,658	148,410,085	71,093,300	2,907	2,846	595	700	26	46	7,130
Indiana.....	570			5	575	15,792,420	15,398,000	622	316			11		949
Iowa.....	311			9	320	11,908,000	5,636,500	382	194			14	1	591
Kansas.....	106			18	124	2,520,000	2,143,000	82	62			28		172
Kentucky.....	280			10	290	11,026,900	10,704,000	494	221			25		740
Louisiana.....	195			9	204	10,130,100	4,544,400	485	49			14		548
Maine.....	274			3	277	3,784,774	4,017,000	402	62			4		468
Maryland.....	367				367	15,593,306	47,003,694	1,168	173					1,342
Massachusetts.....	1,838		3	5	1,846	40,833,368	29,928,500	5,616	2,428			12	2	8,118
Michigan.....	598			2	600	12,019,000	10,986,960	1,172	199			2		1,373
Minnesota.....	320	1		3	324	10,980,000	12,872,000	739	300	10		3		1,052
Mississippi.....	24			9	33	496,500	558,000	36	16			14		66
Missouri.....	733	96		15	844	47,031,300	51,736,000	1,273	573	389	410	17		2,692
Montana.....	65				65	1,620,000	1,346,500	64	28					92
Nebraska.....	152			22	174	6,377,500	2,855,000	220	102			21		343
New Hampshire.....	87				87	882,000	849,500	148	36					184
New Jersey.....	739			11	750	33,612,423	45,587,252	1,525	163			52		1,740
New York.....	2,205	54	173	121	2,553	226,090,613	203,891,264	6,808	941	971	200	960	1,751	11,634
North Carolina.....	37			2	41	1,406,000	910,000	68	10					78
Ohio.....	1,560	19			1,579	73,279,450	29,548,700	2,876	680	110				3,646
Oregon.....	110	2	18	7	137	2,367,800	2,328,000	179	10	16		8	31	244
Pennsylvania.....	1,991		2		1,993	165,994,053	90,184,711	5,583	444				10	6,089
Rhode Island.....	214				214	9,007,000	8,999,200	540	152					732
South Carolina.....	44			3	47	2,012,000	2,546,000	71	35			6		112
South Dakota.....				11	11	100,000						9		9
Tennessee.....	254		12		266	9,625,000	7,706,000	350	120				15	465
Texas.....	269			32	301	4,693,500	4,257,000	267	71			0	11	509
Utah.....	97		18		115	1,756,000	1,990,000	105	22				4	131
Vermont.....	81				81	1,139,500	906,000	77	6					83
Virginia.....	224				224	7,385,450	8,030,000	390	79					459
Washington.....	207				207	11,975,000	7,103,000	182	32	60	15			289
West Virginia.....	80			1	81	1,850,000	1,100,000	114	5			1		120
Wisconsin.....	391				391	10,057,000	11,317,000	556	214					770
Totals.....	17,969	403	425	416	19,213	1,023,819,987	\$777,682,571	39,360	11,206	2,465	1,385	1,489	2,339	58,736
Canada.....	720		32	9	761	\$26,637,200	\$12,166,738	1,543	335			21	50	2,009

Throughout the United States there has been an increase in total capital liabilities amounting to \$108,682,899. The diagrams, which are taken from the *Street Railway Journal*, show the increase in the mileage and equipment of street railways during the past ten years in the United States. One can see readily the steady increase of electric railways and the decline of the horse-car line. In fact, the table shows not a few States in which there are no horse-car lines in operation, while the cable lines of New York, which have been an important factor in the street railway system of that city, during the year 1900 were being changed to the underground conduit system. The supplanting of the horse and cable by electricity will doubtless be complete within several years.

Corresponding with the increase in the amount of electric railways operated in the United States there has also been great growth and activity in the manufacture of machinery and appliances for such railways, and American materials and machinery are now extensively exported abroad.

Though European railways have been greatly developed during the past few years, yet in total mileage and number of cars operated Great Britain and the continental

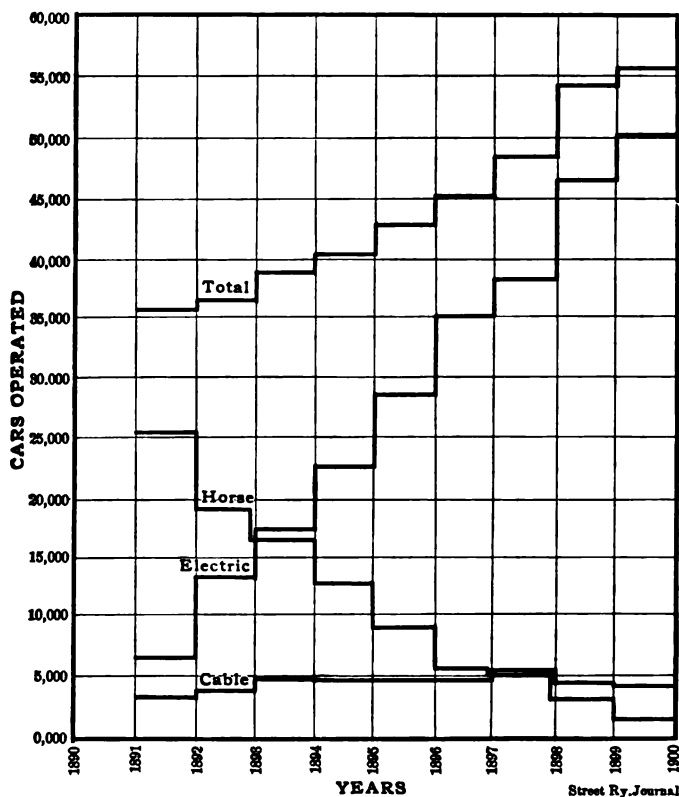


countries rank far below the United States. The following table affords comparative statistics for the various European countries from 1894 to 1895.

DATA OF EUROPEAN ELECTRIC TRAINS AND RAILWAYS, 1894 TO 1899.

NAME OF COUNTRY.	1894.			1895.			1896.			1897.			1898.			1899.		
	Miles of track.	Capacity in kilowatts of power station.	Number of motor cars.	Miles of track.	Capacity in kilowatts of power station.	Number of motor cars.	Miles of track.	Capacity in kilowatts of power station.	Number of motor cars.	Miles of track.	Capacity in kilowatts of power station.	Number of motor cars.	Miles of track.	Capacity in kilowatts of power station.	Number of motor cars.	Miles of track.	Capacity in kilowatts of power station.	Number of motor cars.
Great Britain.....	70	3,000	120	...	...	...	...	...	...	440	30,000	800	500	25,000	1,500	900	40,000	2,000
Germany.....	164	2,984	...	585	5,264	632	643	7,194	857	1,000	19,000	2,000	1,800	26,000	3,100	2,300	54,000	5,400
Austria-Hungary.....	42	1,115	...	73	1,639	129	114	1,949	157	131	2,389	194	169	3,404	243	180	3,860	291
Belgium.....	5	90	...	35	1,130	43	40	1,130	48	56	1,229	73	110	2,415	107	120	3,000	200
Spain.....	12	210	...	12	210	12	47	600	26	74	600	40	98	990	50	167	2,450	144
France.....	68	1,796	...	154	3,610	152	211	4,490	225	448	8,736	432	626	15,158	664	800	25,000	1,000
Italy.....	11	720	...	28	870	33	62	1,690	84	168	5,970	289	212	6,750	311	235	6,600	318
Boemia.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	250	16
Holland.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	120	8
Portugal.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	90	6
Roumania.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	37	1,300	98
Russia.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	49	2,300	120
Norway and Sweden.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	28	1,150	75
Servia.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	13	600	30
Switzerland.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	250	7,500	330

Taking into consideration the condition of the electric railways in 1900, the following statistics have been compiled and tabulated, so as to give a comparative view



of the electric light, power, and traction industry in the leading countries of Europe and the United States of America.

COMPARATIVE APPROXIMATE FIGURES OF ELECTRIC LIGHT, POWER, AND TRACTION STATIONS IN EUROPEAN COUNTRIES AND THE UNITED STATES OF AMERICA, 1900.

NAME OF COUNTRY.	Station kilowatts available for lighting and power.	Station kilowatts available for traction.	Miles of single track electrically equipped.	Number of motor cars running.	Total electrical station capacity available for all purposes in kilowatts.	Population of country.	Area of country in square miles.	Total approximate capital invested in pounds.
Great Britain.....	200,000	40,000	900	2,000	240,000	40,000,000	121,115	£23,000,000
Germany.....	170,000	54,000	2,300	5,400	224,000	53,000,000	211,168	29,000,000
France.....	90,000	25,000	800	1,000	95,000	39,000,000	304,146	12,000,000
Switzerland.....	30,000	7,500	250	330	37,500	3,000,000	15,469	4,500,000
Belgium.....	15,000	3,000	120	200	18,000	6,600,000	11,373	2,100,000
The whole of Europe.....	400,000	150,000	5,000	9,500	550,000	350,000,000	3,756,970	85,000,000
United States of America...	1,300,000	800,000	21,000	68,000	2,000,000	70,000,000	3,561,895	180,000,000

During the year much work has been done on the construction of the power station for the Manhattan Railway Company in New York City. This installation in connection with seven sub-stations, with transforming machinery, will supply current for the entire system, and it is expected by the engineers that it will be completed by June, 1901. The new station will have a capacity of 100,000 horse-power,

and is designed to furnish power for 200 moving trains by means of the third-rail system. There are eight generators which distribute current at a potential of 11,000 volts to the sub-stations. The three-phase current from these alternators, which are the largest ever constructed, is transmitted to step-down transformers at the sub-stations, which deliver alternating current at 390 volts potential to rotary converters, from which a direct current at 625 volts is supplied to the third rail by means of conducting cables. In the trial train which has been in operation on the Second Avenue line, the cars at either end of a train of five or six cars have been motor cars, and it is understood that this will be the general type of equipment adopted. The first official trip of this train occurred on November 22.

An International Street Railway Congress was held in Paris in connection with the Exposition, September 10 to 13. A number of papers were presented, most of which contained certain definite recommendations which were discussed by the congress at large. In the discussion on Traction by Means of Storage Battery Cars, the congress decided "that traction by accumulators has made no real progress up to the present, and that it ought not to be used except in very extraordinary and unusual conditions, because, first, with it it is impossible to give a satisfactory service to the public, and second, because the cost of operating is extremely high." Other reports discussed were on Street Railway Fares, Results of the Application of Electricity to Street Railway Service, Advantages and Disadvantages of Standard and Narrow-Gauge Tracks for Electric Railways, the Equipment of a Central Power Station, Systems of Power Distribution for Electric Railways, the Falk Joint, Heaters for Street Railway Cars, Method of Operating Secondary or Light Railways, Adoption of a Standard Rating for Tramway Motors, and Street Railway Brakes. In many of the discussions considerable difference of opinion was developed, and it was decided in these cases to postpone a final consideration of the recommendations until the next meeting of the International Street Railway Association.

At the International Steam Railroad Congress, held in Paris the last week in September, a paper dealing with independent motor cars was presented by M. E. Sartiaux, of the Italian-Mediterranean Railroad, which discussed various electric accumulator and other motor cars and steam motor cars. The section of the congress, after discussing the report, adopted the following resolution: "The employment of motor cars, either run by themselves or drawing one or two trailers, has been on a very limited scale up to the present, but it seems as if there is an opportunity for this development. It would be very interesting if trials would be made on this subject, not only on lines of light traffic, but also on lines of heavier traffic. It would be desirable if the companies could continue such experiments as they have made with this class of car. The congress would be very glad to see such ordinances as apply to this class of car simplified so as to encourage their use." At the same congress M. M. Auvert and Mazen presented an interesting report on Electric Traction, which described the more important of the secondary railways where electricity was used. The opinion was advanced that while electricity is suitable for secondary railways, its advantages for lines of heavy traffic were not as yet demonstrated. The report gave rise to considerable discussion, and exception was taken to the resolutions presented. The congress finally decided on the following statement: "The congress considers that actual progress has been made in the application of electric traction to certain railway lines operating under special conditions. This progress has been both technical and economical. The information at hand is not sufficient to determine yet whether this application is advantageous under all conditions of railway service, especially where heavy trains are run at high speeds over long distances."

ELECTRO-THERAPEUTIC ASSOCIATION, AMERICAN, will hold its eleventh annual meeting at Buffalo, N. Y., September 24-26, 1901. President, Dr. Ernest Wende, Buffalo, N. Y.; secretary, Dr. George E. Bill, 225 North Street, Harrisburg, Penn.

ELEMENTS, NEW. See CHEMISTRY.

ELEVATED RAILWAYS. See RAPID TRANSIT.

ELGAR, EDWARD WILLIAM, famous English composer, was born at Broadheath, near Worcester, on June 2, 1857. His works have been given with great success at various music festivals of the past years. His sacred cantata, *The Dream of Gerontius*, set to the words of Cardinal Newman's poem, was performed under Richter's baton at the Birmingham Festival. It was hailed as a masterpiece. See Music.

ELLIS, GEORGE VINER, F.R.C.S., emeritus professor of anatomy in University College, London, died April 25, 1900. In 1840 he published his well-known text-book, *Demonstrations of Anatomy, being a Guide to the Knowledge of the Human Body by Dissections*. In 1850 he succeeded Dr. Richard Quain as professor of anatomy in University College, and he retained the position until 1877.

ELTON, CHARLES ISAAC, a prominent English lawyer, died April 23, 1900. He was a recognized authority on old real property law and custom. He was born in 1839, was educated at Cheltenham College and at Balliol College, Oxford, was called to the bar in 1865, and became a queen's counsel in 1887. As a Conservative he represented West Somerset in Parliament in 1884-85 and from 1886 to 1892. His publications include: *Norway, the Road and Fell* (1864); *Tenures of Kent* (1867); *Commons and Waste Lands* (1868); *Copy-holds and Customary Tenures* (1874); *Custom and Tenant-Right* (1882); *Origins of English History* (1882); *The Career of Columbus* (1892); *The Great Book Collectors* (1893); *Shelley's Visits to France* (1894).

EMBRYOLOGY. See BIOLOGY.

EMERALDS. See GEMS.

EMPLOYER'S LIABILITY. See LABOR LEGISLATION.

ENDICOTT, WILLIAM CROWNINSHIELD, former secretary of war, died in Boston, May 6, 1900. He was a direct descendant of John Endicott, the first governor of Massachusetts, and was born in Salem, November 19, 1826. After preparing for college in the public schools of Salem he entered Harvard in 1843, and, graduating in 1847, studied law with Nathaniel J. Lord and then in the Harvard Law School. He was admitted to the bar in 1850, became a member of the Salem common council, and from 1857 to 1864 was city solicitor. For many years he was a leading member of the Essex County bar. He never was elected to public office, but was a Democratic candidate for Congress in 1870, for attorney-general of Massachusetts in 1871, 1872, and 1873, and for governor in 1884. In 1873 Governor William B. Washburn, a Republican, appointed him to the Supreme Court, from which he resigned in 1883 and went abroad. President Cleveland appointed him secretary of war in 1885, and he served as such throughout the administration. From 1857 to 1873 he was president of the Salem Bank, president of the Essex bar in 1878-83, and president of the Peabody Academy of Science at Salem from 1863 to the time of his death. Endicott served with distinction on the supreme bench of Massachusetts, and had a high reputation as a public speaker. His daughter, Mary Crowninshield Endicott, married the Hon. Joseph Chamberlain, the present British secretary of state for the colonies, in November, 1888.

ENGINEERING. See BRIDGE-BUILDING; CANALS; RAILWAYS; TUNNELS, and other articles on engineering topics.

ENGLAND. See GREAT BRITAIN.

ENGLAND, CHURCH OF, known as the "Established Church," in that it is the recognized body in England for the regulation and support of all matters pertaining to the Christian religion. The archbishops and bishops, who are appointed by the king as supreme governor, exercise general supervision. Houses of convocation in each province have charge over matters of doctrine, subject to the approval of the sovereign or of Parliament, where the decisions affect the legal status of the church, while houses of laymen confer upon temporal affairs. In 1900 the Church of England had 34 bishops, including 2 archbishops, presiding over the provinces of Canterbury and York; 23 bishops suffragan, appointed by the bishops as their assistants; 2300 clergymen and over 6,000,000 (estimated) church sittings. The fortieth annual church congress, convened at Newcastle-on-Tyne, held discussions on such topics of present interest as *Progress of the Church During the Nineteenth Century*; *Elementary Education*; *The Cathedral System*; *The Reformation in England*; *Old Testament Criticism and its Bearing on Teaching*; *The Church and the War*; *Autonomy of the Church*; and *Housing of the People*. In 1901 the congress will meet at Brighton. For an account of the ritualistic controversy, see GREAT BRITAIN (paragraph Church of England).

ENTOMOLOGY. The year's progress in entomology has been notable along two lines, while in other directions it has not been remarkable. There has been much discussion of the relation of insects to infectious diseases, and there has been a marked increase in the systematic literature, notably in the description of new species. Economic entomology in the ordinary use of the term, has had an average year; probably the most noteworthy event was the refusal of the Legislature of Massachusetts to appropriate any more money for the extermination of the gypsy moth (*Ocnecia dispar*). It will be remembered that for ten years Massachusetts has had a Gypsy Moth Commission, which had the handling of more than \$1,000,000 for the purpose of exterminating the gypsy moth in the eastern part of the State, where it has been established for more than thirty years. The Commission has received the endorsement of various scientific bodies, and most economic entomologists believed that the ultimate extermination of the pest was possible if the patience of the State were maintained and the necessary funds provided. But the event feared came to pass—the commission was abolished, and the Legislature left the whole problem

with the State Board of Agriculture, giving them merely a nominal appropriation for caring for the property of the commission and keeping watch on the spread of the moth. While there was, no doubt, ground for this action, it is an open question whether it is not a most serious blunder. At the close of the year the secretary of the Board of Agriculture reported that they had carefully watched the spread of the moth during 1900, and found that it had increased greatly in the localities where its extermination had not been completely accomplished, but in those areas which had been regarded as "clean" by the commission of 1899 few signs of the moth were found. And he concludes that unless the State renews its former policy of liberal annual appropriations, the money already spent will have been practically thrown away, as the moth will soon spread to all of its former habitats. In connection with the efforts to exterminate or control insect pests there should be mentioned the attempt of the government of Cape Colony to break up locust swarms by the introduction of a parasitic fungus, which destroys them. Observations during the past year show that living locusts often feed on the dead and dying ones, and experiments were being made to determine whether those which had been killed by the fungus might not be used to spread the disease among the living locusts. One of the interesting books of the year deals with the locust problem. It is a volume of 365 pages, called *The Locust Plague and its Suppression*, by Æneas Munro, M.D., and is published in London. The author has studied the question both in South America and Africa, so that the book contains much important information, but it also contains more or less irrelevant matter, and is not always scientifically accurate, especially as there is a failure to distinguish clearly between the different species of locusts.

Systematic Works.—The work on systematic entomology has been more prolific than for several years past; and while, of course, it is impossible to state at this time exactly how many descriptions of new species were published during the year, enough have already been noted to put the number well over four thousand, an increase of about 30 per cent. over the preceding year. It is only when the literature on the subject is examined that any one not a trained entomologist realizes the extraordinary abundance of insects. Not only in the less-known parts of the world, but even in Great Britain and America, new species of insects are discovered every year. But during 1900 the principal fields for the discovery of new forms were in South America and the Indo-Malayan region. As usual, the beetles, butterflies, and moths furnish the greater portion of the new forms. In such a vast amount of literature it is almost impossible to select the most important papers. What seems to one the most valuable paper of the year may be placed far down on the list by an equally competent entomologist. There are a few systematic papers, which, however, demand at least casual mention because of the immense amount of labor involved in their preparation. The second volume of the *Catalogue of Lepidoptera Phalanx in the British Museum* appeared early in the year, with brief descriptions of 1193 species, a large proportion of which are figured. The book contains 589 pages and 18 plates. Warren's *New Genera and Species of South American Moths of Four Families* contains descriptions of 247 new species; Druce and Dognin, in their separate papers, have described 127 new species of butterflies from the same continent, while Kerremann's papers in the *Memoires de la Société Entomologique Belgique* contain descriptions of more than 230 new beetles of the single family *Buprestidae*, chiefly from the Indo-Malayan region. A very useful publication by the United States Department of Agriculture is a *List of Works on North American Entomology*, a classified index to the most important publications relating to the various orders and families of North American insects. It will be indispensable to every student of entomology in this country.

Insects and Disease.—It has become a fully established fact during the past year that malaria (*q.v.*) and malarial fever is caused by a micro-organism carried by mosquitoes, and the establishment of this fact has led to the investigation of other infectious diseases and their relation to insects; and during the closing year of the century the spread of at least two of the most dreaded diseases to which man is subject has been traced to insects. Curiously enough, most of the insects which have been accused of being carriers of disease are members of the great order *Diptera*, or two-winged insects. It has been proven, apparently beyond dispute, that malaria and malarial fever is caused in man by an organism (*Hamamaba*), which passes through a regular alternation of generations in its life history. For the perfection of its sexual generation it is necessary for it to be in the body of a mosquito, while the asexual generation requires the blood corpuscles of the human body. Mosquitoes are thus not only the carriers of the disease from one infected person to another, but they are actually the home of every other generation of these parasites. If mosquitoes could not bite men, they could not get the disease, while if a man is not bitten by an infected mosquito, he can never have malaria. As one result of this discovery there has been a marked increase in the study of mosquitoes, and the British

Museum has made a collection of over 3000 specimens and placed them in the hands of a specialist, whose preliminary report was published during the past summer. It seems that the mosquitoes that carry malaria belong to the genus *Anopheles*, while the larger and more common genus *Culex* is apparently harmless. The report contains descriptions of 22 species of *Anopheles*, of which 10 are new, and of 90 new species of *Culex*. On account of lack of space we cannot enter into the question of mosquitoes and malaria more in detail here, but we must refer briefly to two other diseases, mentioned above, which are apparently transmitted by insects. One of these is yellow fever, carried, like malaria, by mosquitoes, while the other is typhoid fever, which seems to be spread, at least in part, by flies, especially the common house-fly. The investigations regarding yellow fever have been in charge of surgeons of the United States Army, and have been made chiefly in Cuba. According to them, yellow fever is carried from one person to another by a mosquito of the genus *Culex*, and no other mode of infection is possible. The investigations in regard to typhoid fever have been conducted by the government entomologist, and his conclusions are based on practical experience in various army camps. He maintains that since flies, especially house-flies, frequent human excrement, they carry with them any germs which may occur in such places; and when the excrement of typhoid-fever patients is not properly and immediately covered, the danger of infection by means of flies becomes very great. In this connection it may be mentioned that some recent observations and experiments seem to show that fleas are in some way connected with the spread of the bubonic plague. It has long been supposed that rats conveyed the disease, but evidence seems to indicate that they do this through the fleas with which they are infested. Of the other insects, it is surmised the ant probably propagates plague; bed-bugs propagate tuberculosis, relapsing fever, and cancer; the itch insect is believed to convey leprosy; the tick propagates Texas fever among sheep; and the bacilli of anthrax have been found in earthworms. Investigations made during 1900 and in preceding years by Dr. Hervieux, of France, led him to ascribe the spread of smallpox to flies. The investigators sent by the Liverpool School of Tropical Medicine into Nigeria, Africa, report the discovery in 1900 of the parasite causing elephantiasis in the bodies of mosquitoes. They propose to limit this disease, so prevalent among the negroes in tropical countries, by preventing mosquito inoculation, as suggested for malarial districts. Crude petroleum, systematically poured on the surface of ponds, marshes, and puddles where mosquitoes might breed, has proved most effectual in destroying both the larvæ and the nymphæ of these insects.

EPICARIN. A new remedy formed by the condensation of creosotinic acid and beta-naphthol is epicarin. It is used in cases of the itch and of prurigo. It is odorless and cleanly, and is used in an ointment form, compounded with lanolin or vaseline.

EPILEPTIC ASYLUMS AND COLONIES. England's second colony for epileptics was established at Warford, near Alderley, in Cheshire, where an estate of 400 acres has been purchased by the David Lewis trustees for the purpose. Detached buildings will be erected, each capable of accommodating 20 to 24 inmates. In all about £100,000 will be expended.

Illinois decided in December, 1900, to locate her State Epileptic Colony at Notch Cliff, near Elsah, in Jersey County, to accommodate the 4000 or 5000 epileptics in her State.

An appropriation of \$50,000 was made by the last Legislature of Texas for an asylum for epileptics to be erected at Abilene. The work was begun in the autumn.

The Legislature of Ohio set apart \$480,400 for 1900 and 1901 for the support and enlargement of the State Epileptic Hospital at Gallipolis. A new agricultural tract is to be purchased, and a special appropriation has been made for the pathological laboratory.

The seventh year of the Craig Colony for epileptics in New York State ended October 9, 1900. At this date there were 612 patients in the colony, 234 having been received during the past fiscal year. The total capacity by the spring of 1901 will be 840. The per capita cost for maintenance during the past 3 years has been: 1898, \$300; 1899, \$216; 1900, \$172. It is estimated that when the capacity of the colony reaches 1200 the annual cost per capita will be \$100 a year. A resident pathologist will soon be appointed at a salary of \$2500 a year, and a laboratory has been built and equipped.

EPISCOPAL CHURCH. See PROTESTANT EPISCOPAL CHURCH.

EPWORTH LEAGUE, a religious society of the Methodist Episcopal Church of the United States, was organized in 1889. In 1900 it had 27,800 chapters and 1,900,000 members. The organ of the Epworth League is the *Epworth Herald* (weekly). President, Bishop Isaac W. Joyce; secretary, Rev. Joseph F. Berry. 57 Washington Street, Chicago, Ill.

EPWORTH LEAGUE OF THE M. E. CHURCH, SOUTH, organized in 1891, had 5800 chapters in 1900, and 271,445 members. The League publishes the *Epworth Era*. President, Bishop W. A. Candler; secretary, Rev. H. M. Du Bose, Nashville, Tenn.

ERITREA or **ERYTHREA**, an Italian colony on the western coast of the Red Sea, extends from the frontier of French Somaliland at the Strait of Bab-el-Mandeb for a distance of some 670 miles to Cape Kasar, the eastern limit of the Egyptian Soudan. On the west Eritrea is bounded by the Egyptian Soudan and Abyssinia. The estimated area of the colony is 88,500 square miles and the population, which is largely nomadic, is placed at 450,000. The capital and chief town is Massawah, on the Red Sea. A civil governor, nominated by the crown and under the direction of the Italian minister for foreign affairs, represents the imperial government in the colony, but in its administration and the management of its finances Eritrea is autonomous. It would appear that the colonial government does not meet with great success in covering its expenditure, as the local revenue for the fiscal year 1899 was estimated at 2,491,600 lire and the expenditure at 10,622,400 lire, the deficit being made up by the Italian government. The value of the lira is 19.3 cents. Agriculture, which in the summer months cannot be successfully carried on without irrigation, is in a backward condition. More attention is given to the rearing of sheep, goats, camels, and cattle, and the produce of the flocks and herds form the principal articles of local trade. At Massawah and in the Dahlak archipelago there are pearl fisheries of considerable importance, the value of the pearls taken annually being about 250,000 lire, and of the mother-of-pearl, about 800,000 lire. In 1897 the imports at Massawah amounted to 13,420,866 lire; in 1898, 14,120,990 lire. There is a military railway 17 miles in length connecting Massawah with Saati; a continuation of this line is under construction to Asmara, from which town it is proposed to build a railway to Saganait. Massawah is connected by telegraph with Assab, 319 miles distant, in the southeastern part of the colony, and Assab is connected with Perim, 62 miles distant. In January, 1900, a protocol was signed delimiting Eritrea and French Somaliland, the boundary leaving the coast at Ras Dumeira.

ERLANGER, CAMILLE, French composer, was born in Paris on May 25, 1863. He studied composition with Léo Delibes at the Paris Conservatoire, and gained the *prix de Rome* in 1888 by his cantata *Velleda*. After that he produced a symphonic work, *La Chasse Fantastique*, and a dramatic legend, *Saint Julien l'Hospitalier* (1896). His little lyric drama in three acts, *Kermaria*, was produced in 1897 by Carvalho at the Paris Opéra Comique with indifferent success. His latest work for the stage, *Le Juif Polonais* (The Polish Jew), on the same subject as *The Bells*, was given at the Opéra Comique, Paris, on April 11, 1900, with considerable success. The title rôle was created by Maurel, for whom the opera was specially written. See MUSIC.

EROS. See ASTRONOMICAL PROGRESS.

ETHICAL CULTURE, SOCIETY FOR, of New York, had in 1900 a membership of 929. Sunday morning exercises are held at 11.15 o'clock at Carnegie Hall; leader, Dr. Felix Adler; headquarters, 48 East Fifty-eighth Street. President, John D. Lange; corresponding secretary, Henry G. Ives. There are ethical culture societies in Philadelphia, Chicago, St. Louis, and various cities in Germany, Switzerland, Austria, and Italy. Official organ, the *Ethical Record*.

ETHNOLOGY. See ANTHROPOLOGY IN AMERICA.

EUNATROL is a new drug of the year. It is still under experiment as a remedy for internal use in cases of gall-stone colic.

EUPYRIN. A new antipyretic, yet but little tested, is eupyrrin. This is a vanillin-ethyl-carbonate-paraphenetidin. It is said by Overlach to be of pleasant taste and odor, to dissolve sparingly in water, but readily in alcohol and ether. It crystallizes in pale, greenish-yellow needles, melting at 87° C. It is said to be stimulating, and to be of especial value to children and old people.

EVANGELICAL ASSOCIATION, popularly but incorrectly called the German Methodist Church, a sect essentially like the Methodists in polity and mode of worship, was founded 1800 by Jacob Albright. Its early history was marked by violent opposition, but its subsequent growth has been rapid, and the denomination now includes flourishing conferences in many parts of the world. Since 1843 a quadrennial general conference has met regularly and holds its next session in 1903. The year 1900 completed the denomination's first century of existence, an event which was celebrated by special general exercises and by services held in the various churches. A notable activity of the church is its extensive periodical literature, part of which is issued by a denominational publishing house, at Cleveland, O. The Evangelical Association now has 1052 ministers, 1806 churches, and 118,865

members, an increase in membership for the last year, but a decrease during 1890-1900, due to the formation of the United Evangelical Church (*q.v.*), for the united strength of the two bodies denotes a growth of 30 per cent.

EVERETT, CHARLES CARROLL, D.D., dean of the Harvard Divinity School, died October 17, 1900. He was born at Brunswick, Me., in June, 1829; graduated at Bowdoin College in 1850, and then studied at the University of Berlin. On his return he spent four years at Bowdoin, where he was librarian, tutor, and professor of modern languages. In 1859 he graduated from the Harvard Divinity School. The following ten years he was pastor of a Unitarian church at Bangor Me. After 1869 he was professor of theology at Harvard, becoming dean of the theological department in 1878. His writings include: *The Science of Thought* (1869); *Religions Before Christianity* (1883); *Fichte's Science of Knowledge* (a critical exposition, 1884); *Ethics for Young People* (1891), and *The Gospel of St. Paul* (1892). His philosophic views were influenced by the study of Hegel's philosophy.

EVERETT, ERASTUS, A.M., LL.D., educator, died in Brooklyn May 7, 1900. He was born in Princeton, Mass., in 1813, graduated at Dartmouth in 1836, and for a time was president of the College of New Orleans. After 1854 he resided in Brooklyn, and as a professor in Rutgers Female College and as lecturer at many prominent institutions he became well known among educators. In 1848 he published a *System of English Versification*, which had a wide circulation.

EVOLUTION. See ZOOLOGICAL LITERATURE and ZOOLOGICAL SOCIETIES.

EXPERIMENTAL PSYCHOLOGY. See PSYCHOLOGY, EXPERIMENTAL.

EXPERIMENT STATIONS. See AGRICULTURE.

EXPLORATIONS. See AFRICA; ANTARCTIC EXPLORATIONS, and ARCTIC EXPLORATIONS.

FAED, THOMAS, R.A., a genre painter of England, died August 17, 1900. He was born in 1826 in Scotland, and was the brother of John Faed, also an artist, who helped him in his early artistic career. In 1852 Mr. Faed settled permanently in London, and began the exhibition of his pictures at the Royal Academy. In 1855 he was highly praised for the "Mitherless Bairn." He exhibited at the academy in 1893 "The Rustic Bather." The homely sentiment of his pictures gives them great popularity, though they are exceedingly weak in technique.

FAIRFAX, Sir HENRY, K.C.B., British admiral and commander-in-chief at Devonport, died at Naples, Italy, March 20, 1900. He was born January 21, 1837, and entered the navy in 1850. He was promoted as follows: Lieutenant, 1858; commander, 1862; captain, 1868; rear-admiral, 1885; vice-admiral, 1891; admiral, 1897. After serving in various parts of the world he was placed in command of the *Britannia*, a training ship for naval cadets, 1877. He commanded the *Monarch* at the bombardment of Alexandria, July 11, 1882; and subsequently was in command of the naval and marine forces that seized and occupied Port Said. Fairfax was commander-in-chief of the Australian station, 1887-89; lord commissioner of the admiralty, 1889-92; commander of the Channel squadron, 1892-94.

FAITH CURE. See CHRISTIAN SCIENCE.

FALGUIÈRE, JEAN-ALEXANDRE JOSEPH, eminent French sculptor and painter, died in Paris, April 19, 1900. He was born in Toulouse, September 7, 1831. In 1859, as a pupil of François Jouffroy, he won the *prix de Rome*, and in 1864 made his first exhibit in the Salon, the work being a bronze figure of a boy, "The Victor in the Cockfight," which is now in the Luxembourg. For the prostrate figure of the Christian martyr, Tarcisius, stoned by the pagans, he received in 1868 the Salon medal of honor. He brought out in 1872 his sitting figure of Corneille for the Théâtre Français, an Egyptian dancer, in 1873, and in 1875 an allegorical representation of Switzerland assisting a French mobile guardsman, a work that was presented by the city of Toulouse to Switzerland. Other of his sculptures are a statue of Lamartine for the city of Mâcon (1878); "Diana" (1882); a nymph (1885); "Music" (1889); "The Lady with the Peacock" (1890); a heroic figure, "Poesie" (1892). He also executed "The Fountain of St. Marie," at Rouen, perhaps his most successful group; the "Admiral Courbet," at Abbeville, and the "Gambetta," at Cahors. One of his last works is the monument to Lafayette in Washington, D. C.; and shortly before his death he finished a statue of the late Alphonse Daudet, which is considered one of his masterpieces. This was unveiled at Nîmes. In sculpture, like Henner in painting, Falguière did his best work on single figures. After 1873 he devoted some time to painting. His pictures, which are largely nude figures in half-light, include "Susanne," "The Wrestlers," "Cain and Abel," "Sacrifice to Diana," "Hylas," "Acis and Galatea." Falguière was also active as a portrait painter. In 1878 he was made an officer in the Legion of Honor. He was a member of the Institute.

FALE, PAUL LUDWIG ADALBERT, a German statesman, died July 7, 1900. Born in Silesia in 1827, the son of a Lutheran clergyman, he studied law at the University of Breslau, and began his legal career in 1847. By 1868 he became privy councillor in the Prussian Ministry of Justice, and rendered important service in the codification of laws for the North German Confederation and then for the German Empire; later he was one of the representatives of Prussia in the federal council, and aided in the reorganization of judicial proceedings. Dr. Falk was a member of the Prussian House of Deputies, 1858-61; was elected to the North German *Reichstag* in 1867, and was a member of the Imperial Parliament from its establishment until 1892. In 1872 Prince Bismarck secured Dr. Falk's appointment as minister of public worship and education. Against the united opposition of the Roman Catholic and conservative Protestant parties of Prussia he carried through the so-called May laws. By these laws the supervision of education was declared the exclusive prerogative of the state. This brought on a long contest with the Roman Catholic hierarchy; priests and members of orders and congregations were prohibited from holding positions in the public schools; and when the bishops refused to obey the laws they were imprisoned, deposed, or banished, and religious orders were dissolved. Dr. Falk was succeeded by Herr von Puttkamer in 1879. In 1892 he was appointed president of the Higher Tribunal of Westphalia at Hamm.

FALKLAND ISLANDS, a British crown colony, situated about 300 miles east of the Straits of Magellan, comprise upward of 100 small islands, of which East Falkland has an area of about 3000 square miles, and West Falkland about 2300 square miles, the area of the entire group being some 6500 square miles. In addition the colony includes several small islands and the uninhabited island of South Georgia, lying some 1000 miles east-southeast of the Falkland group and having an area of about 1000 square miles. In 1891 the population, which is almost entirely Scotch, was 1789; in 1897 it was 2050. The chief town and seat of government, Stanley, on the coast of East Falkland, has about 800 inhabitants. Education, which is compulsory, is provided for by two government schools, one Roman Catholic school, one Baptist, and the Darwin school, the aggregate number of pupils in 1898 being 254. The colony is administered by a governor (William Grey-Wilson since 1897), assisted by an executive and a legislative council, all of whom are appointed by the crown. The chief items of revenue are customs and the rents of crown lands, and of expenditure—mails and public works. At the close of 1899 the assets of the colony amounted to £72,515, and the liabilities, £75,659. Other statistics of finance and of commerce are as follows:

	1896.	1897.	1898.	1899.
Revenue	£12,358	£12,970	£13,039	£13,219
Expenditure	13,569	13,636	14,278	13,314
Imports	69,985	63,286	72,987	.....
Exports	132,194	125,123	106,984	.....
Shipping, entered (tons) .....	.....	54,144	62,131	77,262
" cleared .....	.....	.....	62,016	67,700

Great Britain sends nearly 88 per cent. of the imports and receives nearly 97 per cent. of the exports. The people are engaged chiefly in sheep raising and seafaring industries. There are about 732,000 sheep and 2,325,000 acres of pasturage, and in 1898 the wool export was valued at £92,206. Other exports are hides, skins, and tallow; and the imports include foodstuffs, wearing apparel, hardware, machinery, and building materials. There annually pass through the post-office about 28,000 letters and post-cards and 35,000 packets and parcels. The Falkland Islands are the most southerly organized colony of Great Britain. The climate is fairly equable, the thermometer being said to range in winter from 30 degrees to 50 degrees, and in summer from 40 degrees to 65 degrees.

FAMINE IN INDIA. See INDIA (paragraphs History and Famine).

FANE, EDMUND DOUGLAS VEITCH, British minister to Denmark, died March 20, 1900. He was born May 6, 1837, and was educated at Merton College, Oxford. He entered the diplomatic service in 1858 as attaché at Teheran, and subsequently served as secretary of legation at Turin, St. Petersburg, Washington, Florence, Munich, Brussels, Vienna, Copenhagen, Madrid, and Constantinople. He was minister to Servia from 1893 to 1898, and in July of the latter year was transferred to Denmark.

FARRELL, Sir THOMAS, the sculptor, president of the Royal Hibernian Academy, died July 4, 1900, at Stillorgan, County Dublin. He was born in 1829, and was knighted in 1894.

FEDERATION OF LABOR, AMERICAN, President, Samuel Gompers; secretary, Frank Morrison, Washington, D. C. The federation was organized in 1881, and had a membership in 1900 estimated at nearly 900,000. The gain in

membership during 1900 was over 300,000. The federation now embraces 82 national and international unions, composed of 9494 local branches, with a membership of over 800,000. Besides that, there are more than 1000 independent local organizations directly affiliated with the federation. The report of strikes showed 455 won, 74 compromised, 53 pending, and 106 lost. The *American Federationist*, published monthly, is the official organ; in addition the association publishes many pamphlets and other papers. The twentieth annual convention was held in Louisville, Ky., December 6-15, 1900; the convention of 1901 to be held, commencing December 5, at Scranton, Penn.

Among the questions of general interest discussed at the Louisville convention was the ever-recurring one of "independent political action," by which its advocates mean the organization of a political party of a distinctly working-class character. As the Socialists are the only advocates of that policy, discussion of the resolutions bearing on the question usually turns at the conventions of the federation on the general question of socialism. The Louisville convention proved no exception to the rule, both as regards the discussion and the results. There were three resolutions introduced, all pointing to the failure on the part of the national and State Legislatures to enact laws for the benefit of the working class and more or less directly advocating socialism as the goal of independent labor politics and the means of the emancipation of labor. The committee to which they had been referred reported adversely on all the three and submitted a substitute in their stead, which, although making considerable concessions to socialism, opposed its official endorsement by the federation for fear of dissensions in its ranks which such action might call forth. Thus, the resolution says:

"The aspirations, hopes, and aims of the members of trades unions are very similar to the expressed wishes of the greater body of Socialists—namely, that the burdens of toil may be made lighter, and that each worker shall enjoy the complete benefit of that which he or she produces. That men and women shall receive a greater amount of liberty, that the years to come may be made brighter than the past or present, are truly the ideals of us all; but we take the position, nevertheless, that because of personal, local, national, or other reasons, the workers of our country reach different conclusions as to the method of reaching the desired end, although there be little difference among us as to the desirability of that end. We declare it to be an inherent duty of our several unions to publish in their journals, to discuss in their meetings, and the members thereof to study in their homes all questions of a public nature which have reference to their industrial or political liberty; but we as firmly declare that it is not within the constitutional or any other power of the American Federation of Labor to legislate, resolve, or specify to which political party members of our unions shall belong or for which party they shall vote."

Socialism formed also the dividing line at the convention in the discussion of the trust question. At the convention of 1899 the federation, although refusing to commit itself to a declaration for socialism, yet adopted a resolution on trusts, which concluded with the recommendation to the workingmen of the country to "study the development of trusts and monopolies with a view to nationalizing the same." The Socialists wanted the federation to go again on record as favoring the nationalization of trust-controlled industries, but were defeated by a vote of 4552 to 349, and the resolution finally adopted reads as follows:

"Whereas, Since the Detroit convention of the American Federation of Labor the movement of capital to concentrate and co-operate has not lessened, but, on the contrary, nearly all productive industry outside of agriculture is now controlled by trusts and monopolies, which have the power largely to lower wages, on the one hand, or raise prices, on the other, thus enforcing great hardships upon the working people; therefore, be it

"Resolved, That this twentieth convention of the American Federation of Labor reaffirm its position upon this question by warning the unorganized working people to organize into the respective unions of their trades and crafts as the best means of resisting the encroachments of said trusts and monopolies, and we also renew the recommendation that trade workingmen study the developments of the trusts and monopolies."

The creation of a new executive department to look after the industrial and commercial interests of the country was considered under two resolutions, one favoring the bill pending before the United States Senate for the creation of a Department of Commerce and Industry, and the other declaring for "a governmental Department of Labor, . . . the head of which should have a place in the cabinet, . . . and . . . be a *bona fide* trades-unionist." The latter resolution was endorsed, with the exception of that part of it which called for a trades-union member. Much of the time of the convention was given over to trade disputes which turned on the question of trade autonomy. The question is a very old one in the trades-union world. It formed the dividing line two decades ago between the Order of the Knights of Labor and

the present federation. Extreme centralization of authority caused the downfall of the order, and was responsible for the organization of the federation. Trade autonomy was thus made the cardinal principle of that organization from its very inception. Of late years, however, the concentration of industry and the gradual obliteration of the lines of demarcation of hitherto distinct trades, brought about by new inventions, have thrown thousands of workmen of various crafts into the same industries. In the resulting confusion friction has become inevitable. As an illustration of that may be mentioned the invention of the type-setting machine, which brought the machinist and the type-setter so closely together as to give rise to the present dispute between the International Typographical Union and the International Association of Machinists over their respective jurisdiction. The disputes between these two organizations and between a number of others, raging now for a number of years, have been treated by the federation conventions rather timidly. The federation hesitates to face the new conditions in a radical manner for fear of losing organizations of certain trades which are threatening with secession in case they should be denied complete autonomy within their particular spheres. But the conflict within the federation is bound to go on and become more bitter until it is settled in accordance with the changed conditions. That the principle of concentration is going to triumph in the end, in spite of the aversion to abandon time-honored traditions, may be seen from the fact that the most important disputes, the one mentioned above and that between the Brewers' and Engineers' unions, were decided in favor of unlimited control of the entire printing and brewing industries by the respective unions representing them.

FENCING. The principal fencing events of 1900 were the intercollegiate championships and the junior team, senior team, and individual championships of the Amateur Fencers' League of America. The seventh annual intercollegiate championships, held at the New York Racquet and Tennis Club on March 31, were captured by Harvard, which won 23 bouts out of the 90 contested; the record of the other teams entered was: United States Naval Academy, 22 bouts; Cornell, 21 bouts; Columbia, 20 bouts, and Yale, 4 bouts. Three men composed a team. A. E. Wieland, of Cornell, won the individual championship, with 11 bouts; L. E. Ware, of Columbia, 10; H. Tamuva, Naval Academy, 9. The junior team championships of the Amateur Fencers' League of America, held at the Fencers' Club, New York, on April 14, were won by Columbia, 22 bouts; second New York Athletic Club and New York Turn Verein, 11 bouts each; fourth, Yale, 10 bouts. The senior team championship, April 21, was won by the Fencers' Club, of New York, 6 bouts; New York A. C., 3 bouts. The individual championship, April 27-28, was played as follows: Foils, won by Fitzhugh Townsend, Fencers' Club, 16 bouts; second, a tie between Charles Tatham, Fencers' Club, W. D. Lyon, New York A. C., and J. P. Parker, Boston A. A., Tatham winning second place in the extra bouts. Duelling swords, won in an extra bout by W. D. Lyon after he had tied at 14 bouts with Charles Tatham; third, Dr. J. H. Claiborne, New York A. C., 13 bouts. Sabres, won by F. L. Slazenger, New York A. C., 19¼ points; second, J. L. Erving, Fencers' Club, 17½ points; third, A. P. Pope, New York A. C., 15¼ points. On April 7, the Boston A. A. team and the Fencers' Club, of New York, met at Boston, the former winning by 5 bouts to 4. On April 21, at New York, the Fencers' Club defeated the New York A. C. for the New York A. C. trophy.

FERSAN. A new remedy for use in anæmia is fersan. It is made from fresh beef blood, and is a soluble acid albuminate of iron. The red blood cells, separated by the centrifuge, are treated with concentrated hydrochloric acid, and their iron is extracted. Fersan appears as a brown powder with a salty taste. It does not coagulate on heating. It is supposed to be absorbed from the intestine, as artificial gastric juice does not affect it. The stools are not blackened by its use, and the inference is drawn that it is all absorbed when administered.

FERTILIZATION, ARTIFICIAL. See BIOLOGY (paragraph Artificial Parthenogenesis).

FIBICH, ZDENKO, the Bohemian composer, died October 16, 1900. He was born in 1850; and, having studied at Prague, Leipzig, and Paris, in 1878 was appointed director of the Russian Church at Prague. As a composer he became one of the most prominent of the young Czech group by his so-called symphonic poems, *Othello*; *Zboj and Slavoj*, and *Vesna*. His versatility made him popular in various lines. Among his operas may be mentioned *The Storm* (1895); *Hedy* (1896); and his greatest success, *Sarka* (1898). He also wrote symphonies, quartets, choruses, and melodramatic music to the trilogy, *Hippodamia* (1891), and published a *Method* for the piano-forte.

FIELD COLUMBIAN MUSEUM, CHICAGO. See ANTHROPOLOGY IN AMERICA.

Fiji, a crown colony of Great Britain, is a group of about 225 islands in the southern Pacific, some 1100 miles north of New Zealand. The gross area, including Rotumah, an island annexed in 1881, is about 8045 square miles, and the estimated population of the 80 inhabited islands at the end of 1898 was 121,738; at the end of 1899 the estimated number of inhabitants was 122,673, of whom 98,478 were natives, 13,282 Indians, and 4373 Europeans. The death rate is high, and for many years the native population has been steadily decreasing, though recently the rate of decrease has been growing less. Nearly 100,000 of the inhabitants are reported as Wesleyans and about 10,000 as Roman Catholics. The area of the largest island, Viti Levu, is about 4250 square miles, or four times the size of the State of Rhode Island. The colony is administered by a governor, Sir G. T. M. O'Brien, since 1897, who is assisted by an executive council of 4 members and a legislative council of 6 official and 6 unofficial members, all being appointed. The governor is also the British high commissioner and consul-general for the western Pacific. The colony is divided into 17 districts, in 12 of which native chiefs are permitted, with certain restrictions, to continue the old Fiji rule and customs; but the present governor has done much to improve the condition of the natives. Instruction is carried on principally by the Wesleyan mission, which in 1898 had 1926 schools, with an enrolment of 33,369 pupils; there were also about 150 Roman Catholic schools, with about 2000 pupils.

For the last few years the revenue, of which over one-half is derived from customs, has rapidly increased, owing chiefly, it is said, to the absence of any severe hurricane. The public debt amounts to about £209,000. Other statistics of finance and of commerce are:

	Revenue.	Expenditure.	Imports.	Exports.
1897.....	£74,492	£73,232	£248,748	£431,860
1898.....	94,165	87,594	234,850	534,105
1899.....	98,621	95,567	263,043	481,856

The increased expenditure is due to public improvements. The cultivated land is reported to amount to about 49,000 acres, and the uncultivated, much of which is woodland, to about 4,900,000 acres. The products are many, including bananas, pineapples, oranges, citrons, limes, and other fruits, copra, maize, peanuts, and sugar. The last is the most important, and it has been said that the wealth and future prosperity of the colony undoubtedly depend on this product. In 1899 sugar represented about two-thirds of the total export. Considerable success has attended the measures taken to induce the Indian laborers who had served out the period of their indentures to remain as independent cultivators. The trade of Fiji is principally with New Zealand and Australia. The leading imports are hardware, provisions, and textiles; and the chief exports sugar, copra, fruit (especially bananas), and distilled spirits.

It was reported in September, 1900, that the islands desired to federate with New Zealand; and in October the parliament of New Zealand resolved to ask the imperial government to sanction the incorporation of Fiji with that colony. In the same month, however, the British Colonial Office stated that the imperial government would not at that time consider a proposal for federation. Addressing the natives in November, the governor of Fiji condemned the federation proposal with New Zealand, affirming that the latter colony had robbed the Maoris of their lands and was desirous of obtaining Fiji lands.

FILARIA. The filariidæ form a parasitic order, or family, of the Nematoda, possessing a filiform body, smooth or striated transversely, and a head continuous with the body, provided with a round or triangular mouth. Several varieties of filaria have been described. One species has been found under the conjunctivæ of negroes in Africa; one was discovered in the blood of the camel; one is found in the hearts of dogs of eastern Asia. *Filaria medinensis*, the "Guinea worm," is found in the tissues of various parts of the body of the negro in Guinea, Senegal, Arabia, India, Persia, and Egypt. This filaria is from one to twelve feet long, one-tenth inch in diameter, cylindrical, and provided with a flat head and blunt tail. It gains access to the system from impure drinking water, which contains the parasite in larval form. It causes painful tumors, blisters, or boils, and sometimes gangrene. It is supposed by some to be the fiery serpent which is mentioned in the Bible as attacking the Israelites near the Red Sea (Numbers xxi.). *Filaria sanguinis hominis* was discovered in 1872 by Lewis, of Calcutta, in the urine of patients and also in the tissues of the kidneys. It is about one-seventy-fifth of an inch in length. It is indigenous to Brazil, India, Africa, Australia, China, the West Indies, and the Southern States of this country. It was suggested by Manson while in China in 1880 that the filariæ were taken up by mosquitoes with the blood of patients affected, and after development in the insects were discharged into water by them at the time of depositing their eggs. This water, being drunk by others, served to transmit the parasites to

new victims. During 1900 new investigations have been made into the causation of filariasis, the condition caused by the presence of filariæ. Lieutenant-colonel J. Maitland, a physician in the British army, at a meeting of the British Medical Association in August, 1900, dissented from the theory of direct inoculation from the mosquito to the human being, and believes that water is the medium of introduction of the parasite. He attributes the immunity of the European to the drinking of boiled water, and not to the use of the mosquito-bar. Captain S. P. James, by dissecting the heads of mosquitoes of the species *Anopheles Rosii*, was able to demonstrate filariæ partly within the labium of the proboscis, partly curled up in the tissues of the head. On being transferred to water, the filariæ died in two and one-half hours, while if transferred to a drop of human blood, they lived six hours. Low, of Rome, found young filariæ in mosquitoes of the genus *Culex*. He traced their passage from the thoracic muscles to the prothorax and head, and found them in the cellular tissue in the neighborhood of the salivary glands, in the proboscis, between the labium and hypopharynx, among the stylets. The obvious inference is that they enter the human tissues, when the insect next feeds on man. See INSECTS AND THE PROPAGATION OF DISEASES.

FINANCE. See the articles on the United States and foreign countries; also BANK-BANKING and CURRENCY REFORM.

FINLAND, a province of Russia, lying north of the Gulf of Finland, and separated from Sweden by the Gulf of Bothnia, has an area of 144,255 square miles, of which over 11 per cent. is under lakes. The population, which in 1897 was 2,592,864, was estimated in 1900 at about 2,700,000. In 1897 the inhabitants consisted of some 2,231,300 Finns, 351,300 Swedes, 7300 Russians, 1820 Germans, and 1160 Laps; of the total number, about 2,542,000 were Lutherans and 47,000 members of the Greek Orthodox Church. The chief towns include Helsingfors, the capital (population with Sveaborg, about 81,000), Åbo (35,000), Tammerfors (29,000), Wiborg (24,000), Uleaborg (14,500). Education in Finland, compared with that in other Russian provinces, is in an excellent condition. It is said that there are scarcely any illiterates in the country. In 1898 there were published 221 newspapers and periodicals, of which 129 were in Finnish, 87 Swedish, and 5 Finnish and Swedish. The University of Helsingfors in 1898 had 2134 students, of whom 285 were women.

Government and Finance.—Finland was formerly a grand duchy, the office of grand duke being vested in the Emperor of Russia. Its constitution provides for a diet, consisting of four estates—nobles, clergy, burghers, and peasants. The laws enacted by this body may be vetoed by the emperor. The chief administrative power rests with a senate, whose members are nominated by the crown. Its president is the governor-general of the province. The war department of Finland is under the Russian ministry of war, and the department of foreign affairs is under the Russian chancellor. The estimated revenue and expenditure for 1898 balanced at about 123,249,000 marks. (The Finnish mark has the same value as the franc, 19.3 cents.) The public debt at the beginning of 1899 amounted to 115,028,841 marks.

Industries, Commerce, etc.—Much of the cultivated land is divided into small holdings. The principal crops are rye, barley, oats, and potatoes; a large importation of cereals, however, from Russia and Germany is necessary. Iron, copper, lead, and graphite occur. The iron industry is of importance, and there are successful manufactures of cotton, linen, and woollen textiles, matches, refined sugar, and spirituous liquors. The forests are very valuable, immense quantities of timber and wood-pulp being exported. The export next in importance is butter. Commerce is carried on chiefly with Russia, Germany, Great Britain, and Norway and Sweden. The total imports and exports in 1897 amounted to 202,500,000 marks and 168,700,000 marks respectively; in 1898, imports, 237,000,000 marks; exports, 178,000,000 marks. The largest import is cereals, others of importance being iron, ironware, and machinery, cotton and woollen textiles, sugar and coffee. In 1898 there entered at the ports 8566 vessels, of 1,918,675, and cleared, 8588 vessels, of 1,927,605 tons.

The numerous lakes of Finland, connected with each other and with the Gulf of Finland by canals, form a remarkable system of inland navigation. There are over 1650 miles of railway, of which all but 50 miles are owned by the state. The total revenue of the state railways in 1897 was 19,524,000 marks, and the total expenditure 12,281,600 marks. There are nearly 800 post-offices.

History.—The methods aiming at the political uniformity of the Russian empire, and adopted by the Russian government in 1808 and 1809, whereby the Grand Duchy of Finland became a Russian province, and Finnish soldiers were forced into the imperial service outside of the province, were continued in 1900 by imperial ukase in June, ordering the gradual supersession of the Finnish and Swedish languages by the Russian in the official departments and offices of Finland. The change begins in the correspondence of the Finnish senate and the department of state, and five years are allowed for its completion among the minor and provincial officials.

Private individuals, however, will, as heretofore, be allowed to address government officials in their native tongue. The Russian government offered as an excuse for the ukase the declaration of Alexander I. in 1808 that Finnish and Swedish should be used officially only until such time as Russian could be introduced. In protest members of the Finnish Diet pointed out that when proper relations were established between the two countries at the meeting of the estates at Borga in 1809 there was due recognition of the native languages. They held that the two languages (Finnish and Swedish) "are not merely local languages in subordinate relations to an imperial language." "They are the national languages of Finland, and they alone can . . . be the official languages of Finland." As only about 8000 of the 2,700,000 inhabitants of Finland speak Russian, it was evident to the Finns that the application of the manifesto would place the administration of the former duchy in the hands of Russian officials. On the ground of unconstitutionality the Finnish senate refused to promulgate the ukase, and when imperative orders for publication came from St. Petersburg fourteen of the twenty-one senators resigned. Among other things that called forth protest from the Finns were the alleged unconstitutional restrictions on the formation of associations and the right of meeting, and a press censorship, by which on June 26 the leading newspaper of Finland, the *Nya Pressen*, was suppressed. Russia seems determined to crush out every evidence of the old Finnish national spirit, and acting Governor-General Bodrikoff has gone so far as to suggest the abolition of the Finnish Diet. The rapidity and violence by which this "Russification" is being brought about calls forth not a little surprise when it is remembered that the Russian policy in the Asiatic territorial acquisitions has been one of liberality, the imperial authorities interfering as little as possible with the traditional manners and customs of annexed peoples. Although Finland cannot hope to resist Russian oppression by force of arms (the Russian army on a war footing far outnumbering the total population of the province), yet, in view of the discontent and hatred raised against the imperial government and the fact that Russia's only gain has been the attainment of political uniformity and the power to exact military service from the Finns wherever she choose, the action seems hardly politic or justifiable. In November, 1900, it was announced that General Bodrikoff was continuing, by suspension and permanent suppression, to destroy the native Finnish press.

FIRE PROTECTION. Electric automobile fire engines have, within the past three years, been introduced in Chicago, Kansas City, and Pittsburgh, while for the Paris fire brigade there has been constructed an automobile engine. In Detroit, the fire department was improved during 1900 by the addition of the fire-boat *Deluge*, which possesses several new features. As it is likely to be called out when the lake is frozen, it is built of steel so as to force a passage through the ice. The length is 122 feet; beam, 25 feet; depth, 13 feet, and there are four compartments, separated by three water-tight bulkheads. The forehold is fitted up for drying hose; in the middle hold are the boilers and coal bunkers; in the afterhold are the propelling engines, fire-pumps, and workshops. The pilot-house and deck are built of steel and reels for 2000 feet of hose are fixed in a room at the after end. On each side amidships are lockers for nozzles and fittings. The city of New York has built (1900) for its fire department a portable electric search-light, which has been used at fires with great effectiveness. The intense white rays of light penetrate a building filled with smoke, so that the firemen can easily see to move around.

At the Paris Exposition American firemen, as represented by the fire department of Kansas City, Mo., under George C. Hale, made a fine showing. The company included 15 men, who took with them a new steam fire engine, three horses, two sets of swinging harnesses, 1000 feet of hose, and full sets of ladders and fire-saving apparatus. About 5000 firemen from different parts of the world were present to take part in the grand tournament. The first competition was a steam fire engine test, about 25 engines competing. Every boiler was filled with cold water, and from the time of lighting the fire till the smoke poured out of the stack, the average time of steaming for the European engines was from 8 to 12 minutes, while it took the American engine only 5½ minutes to steam up. The streams at this test were thrown into the river, the largest from the European fire engines not reaching more than two-thirds of the way across. On the opposite bank were crowds of witnesses, at a safe distance, as they supposed, from the falling water. But at a signal from the engineer the nozzle of the American company was brought into proper position, and the stream fell in torrents upon the crowd, and continued to fall on the river bank for half an hour. The second test was in hitching up teams. The American company made a series of preliminary exhibition hitches. The team, stationed at a distance of 200 yards, would, at the bugle signal, start and run full speed to the wagons. A series of fire hoops were placed on the track and the horses ran unhesitatingly through the blazing hoops to their places. At the final test for the championship, the competing companies were placed a quarter of a mile from a skel-

eton building, seven stories high, placed in front of the grand stand; each company was to make the run, throw a stream on the fourth story of the building, and rescue two persons from the sixth and one person from the seventh floors of the building. This the American company did, took down their ladders and life lines, lined up before the jury, and saluted in three minutes and forty seconds; the next best time was made by a company from Milan, Italy, and was twelve minutes and ten seconds. In commenting on the superiority of American over European fire-protection service, at the convention of fire engineers held at Charleston, S. C., in the latter part of 1900, Chief Hale explained that this superiority is due to the greater fear of fires entertained by Americans. This in turn is caused by difference in the construction of buildings. The roofs of buildings in Glasgow, Edinburgh, London, and Paris are of slate and tile, and wooden buildings are infrequent. There are no inflammable signs or awnings, the staircases are of stone and the floors, for the most part, of concrete or other non-inflammable material. He adds: "I believe that America could better profit by imitating their buildings than they by imitating our fire appliances."

The explosion in the Tarrant building in New York late in 1900, by which a number of buildings were destroyed and seven lives lost, as the probable result of the improper storage of chemicals, has given fresh force to the discussion as to responsibility for fires caused by carelessness or criminality. Thus far the tendency in America has been to place the financial loss occasioned by fires wholly upon the insurance companies, no matter from what causes the fire originated. Twenty States have legal enactments providing that even in case of over-insurance on a building the company must pay the amount of the policy without regard to the actual value of the property destroyed. As the result of this and other unfortunate conditions, it has come about that the United States has a fire waste in cities six or seven times greater than any other country in the world, and this waste is increasing, as is shown by the following figures, taken from the *New York Journal of Commerce and Commercial Bulletin*: Loss by fires from January to August: 1898, \$74,960,350; 1899, \$86,829,850; 1900, \$107,206,250.

FISH AND FISHERIES. The year 1900 has seen little that is extraordinary either in the advancement of our knowledge of fishes or in methods of propagating or capturing them; but, nevertheless, there have been some events of sufficient importance to make them worthy of note.

The meeting of the American Fisheries Society was held at Wood's Hole, Mass., in July, and it was decided to erect at that place a suitable memorial to Spencer F. Baird, to whom the establishment of the Wood's Hole station and the building of the laboratory there are very largely due, and who was for many years United States commissioner of fish and fisheries. The memorial is to be provided from a fund raised by subscription among all those interested. In September there was an International Congress of Fisheries and Agriculture at Paris, in connection with the Exposition, at which the United States was represented by Dr. H. M. Smith, the assistant in charge of Scientific Inquiry of the Fish Commission.

Fish Culture.—An interesting experiment in the matter of training men for work in connection with fisheries was a course in fish culture given for two weeks in May at Axton, in the Adirondacks, in connection with Cornell University's College of Forestry. It was under the direction of Dr. B. W. Evermann, of the United States Fish Commission, and the work consisted of lectures, laboratory, and field work, and visits to the State hatchery at Clear Water. The lectures dealt with natural and artificial methods of reproduction, the care of fish fry, methods of shipment, pollution of streams and lakes, etc. There were also lectures on the species of fish propagated artificially in America, especially the salmon, trout, bass, shad, and pike.

Hybridization.—A very interesting piece of work that has been carried on during the year is that of Mr. W. J. Moenkhaus on *hybridization* among fishes. Crosses between some thirty species of fish have been tried and with almost uniformly successful results. In four cases development only proceeded to the formation of the neural tube, but in all other cases the eggs hatched, and in many cases the young fish have grown to considerable size. One of the most remarkable things about these experiments has been the rather surprising fact that the degree of relationship had little effect on the vigor of the resulting cross. Among mammals and birds, successful crosses are known only among forms which are nearly related, at least members of the same family. But among fishes, species of two different families, or even orders, were crossed without difficulty.

General Studies.—In the study of fish fauna there has been considerable progress made during the year, especially in Japan and Africa. President Jordan, of Leland Stanford, Jr., University, with several assistants, spent part of the year in Japan collecting the native fishes, and he is now engaged in preparing a monograph on the fishes of Japan, based on the very extensive collections he has made. In Africa, the principal work has been in Egypt and in the Gambia district. Mr. L. S. Loat is

investigating the fishes of Egypt for the British Museum and the Egyptian government. He has already sent to England several thousand specimens, chiefly from the Nile. The work in the Gambia region has been done by Mr. J. S. Budgett, of Trinity College, Cambridge, who had previously investigated the zoology of that region. His principal object was to obtain material for studying the development of the curious fish *Polypterus*, but unfortunately in this he was not successful. He did, however, procure some young ones, the smallest of which was only an inch and a quarter in length; the dermal bones were not developed, and the external gills were of great size. Moreover, Mr. Budgett secured a great deal of information regarding the breeding habits of several curious fishes, and he brought home a fine series of the eggs and larval stages of the remarkable dipnoid, *Protopterus*, a fish whose development has hitherto been unknown.

The United States Fish Commission.—As usual, the report of the commission is a record of progress, and again the figures of fish distributed surpass those of previous years. The year for which the report is issued ended June 30, and up to that time about 1,000,000,000 young fish had been distributed. The most important items in the list are 337,000,000 of whitefish, 265,000,000 of shad, and 241,000,000 of cod. It is interesting to note how large a proportion of the fish hatched is turned into the fresh waters of the country, the marine fishes being greatly in the minority. Three new hatcheries were in operation, making 35 in all. Trout have now been established in Montana and Colorado, in waters which formerly lacked them. The interesting experiment has been continued of tagging adult codfish, for the purpose of acquiring data as to their migrations and growth. The biological survey of Lake Erie has been continued, and biological observations have been carried on in various lakes in Maine, New York, Indiana, West Virginia, North Carolina, California, Oregon, and Arizona. Special investigations have been made of the lobster and clam industries, and of the North Carolina oyster-beds. The condition of the lobster industry is serious. In New England it has fallen off 50 per cent. in quantity during the past ten years, while the value has risen correspondingly. Efforts have been directed toward rearing larvæ from the eggs through the early defenceless stages before liberating, but it is clear that little permanent improvement can be hoped for until the taking of young lobsters is not only theoretically but actually prohibited. The work on the clam has shown that it may be feasible to apply to it the methods of planting which are so extensively used with the oyster. Some very interesting experiments have been made at Lynnhaven Bay, Va., to determine whether it is practicable to fatten oysters by the use of a commercial fertilizer through the medium of their diatomaceous food, the diatoms appropriating the fertilizer. While the oysters can be fattened, the process is apparently too slow to be of commercial importance at present. Eastern oysters have become well acclimatized in San Francisco Bay, where they support a valuable industry, which is of more importance each year; but at Willapa Bay, Washington, the water seems to be too cold for the setting of the spat, and oysters from northern Japan are to be tried there. During the winter the *Fish-Hawk* was on the North Carolina oyster grounds investigating their biology, and endeavoring to ascertain the cause of their failure. During the summer she was at Wood's Hole, where, with the schooner *Grampus*, she afforded assistance in marine collecting to the workers at the Fish Commission laboratory. At the close of the season she returned to southern waters for work on the sponge grounds of East Florida. The *Albatross* returned from her South Pacific cruise in the spring, and spent the summer in work connected with the fisheries of Alaska. For the account of her work in the South Seas, and for the work of the Wood's Hole, Beaufort, and other laboratories, see ZOOLOGICAL STATIONS.

FISHERIES SOCIETY, AMERICAN, organized in 1871, had in 1900 a membership of 323. General meeting for 1901 at Milwaukee, July 19-21. President, F. B. Dickerson; corresponding secretary, W. de C. Ravenel, Washington, D. C.

FLAX. Owing to the fact that flax occupies only a secondary place among the crops in most countries, the statistics for that product are generally published about a year after the harvest, and consequently the latest figures at present available are for the year 1899. The principal flax-producing countries are Russia, the United States, British India, and Argentina, and up to 1899 Russia held the first place, contributing from 40 to 50 per cent. of the world's supply. In 1899 the flaxseed crop in the United States increased from 17,217,000 to 20,086,000 bushels, while the production of Russia showed a decline from 28,537,500 to 18,022,000 bushels, consequently for that year the United States became the largest flax-producing country with a crop amounting to 29 per cent. of the world's supply, while Russia takes the second place, with 26 per cent. of the total production. The prices for flaxseed in the United States during 1899-1900 were the highest ever attained, the average price for the period from August, 1899, to August, 1900, being about \$1.49 per bushel; and

the total value of the crop for 1899 may be put down as \$30,000,000. Of the total crop, about 70 per cent. was retained for domestic use. The total value of flaxseed and its products amounted to \$9,057,896, of which about 62 per cent. consisted of oil, oil cake and oilmeal. The following table, published by the United States Department of Agriculture, gives the world's production of flax for 1897-99:

COUNTRIES.	SEED.			FIBER.		
	1897.	1898.	1899.	1897.	1898.	1899.
	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
United States*	11,000,000	17,217,000	20,068,000			
Manitoba.....	255,500	381,000	315,000			
Mexico.....	258,000	73,000	* 200,000			
Argentina*.....	7,000,000	7,000,000	9,000,000			
Total America.....	18,513,500	24,651,000	29,601,000			
Ireland.....				16,280,000	15,082,000	16,084,000
Sweden.....	73,500	72,500	72,000	3,917,000	3,644,000	3,900,000
Netherlands.....	275,000	176,000	254,000	11,508,000	10,208,000	11,169,000
Belgium.....	350,000	407,000	383,000	30,123,000	35,896,000	32,809,000
France.....	594,000	337,000	345,000	41,334,000	25,126,000	27,834,000
Italy†.....				41,917,000	41,917,000	41,917,000
Austria.....	734,000	802,000	735,500	88,195,000	88,833,000	92,067,000
Hungary.....	220,000	250,000	240,500	10,689,000	14,989,000	12,821,000
Croatia-Slavonia.....	58,000	51,000	26,500	9,816,000	10,325,000	7,921,000
Total Austria-Hungary...	1,002,000	1,103,000	1,002,500	108,640,000	114,097,000	112,809,000
Roumania.....	676,000	461,000	84,500			
Bulgaria.....	30,000	34,000	1,000	3,000,000	3,331,000	27,117
Servia.....	11,000	11,000	11,000	1,156,000	1,156,000	1,156,000
Russia.....	27,296,500	28,537,500	18,082,000	1,340,384,000	1,530,776,000	876,738,000
Total Europe.....	30,238,000	31,159,000	20,125,000	1,498,054,000	1,780,693,000	1,123,943,000
British India.....	8,839,500	17,115,000	11,827,000			
Algeria.....	5,500	13,500	7,000			

RECAPITULATION.

America.....	18,513,500	24,651,000	29,601,000			
Europe.....	30,238,000	31,159,500	20,125,000	1,498,054,000	1,780,693,000	1,123,943,000
British India.....	8,839,500	17,115,000	11,827,000			
Algeria.....	5,500	13,500	7,000,000			
Total.....	57,596,500	72,939,000	68,553,000	1,498,054,000	1,780,693,000	1,123,943,000

* Commercial estimate.

† Average, 1892 to 1895.

‡ 1897 figures.

§ Average, 1896 to 1898.

FLORIDA, the southernmost State of the United States, has an area of 56,680 square miles. Florida was organized as a Territory March 30, 1822, and admitted as a State March 3, 1845. The capital is Tallahassee.

Agriculture.—The total area under cultivation in 1900 was estimated at 1,058,897 acres. The following shows the production and value of the principal crops for the calendar year: Cotton (upland), 27,662 bales, \$780,984; cotton (sea island), 36,321 bags, \$1,538,705; corn, 4,654,774 bushels, \$2,438,862; peanuts, 1,219,223 bushels, \$932,418; sweet potatoes, 2,268,788 bushels, \$855,649; sugar cane, 66,064 barrels of syrup, \$546,913; tobacco, 969,384 pounds, \$247,901; oranges, 334,466 boxes, \$660,962; pineapples, 187,800 crates, \$392,284. Federal officials estimated the area devoted to cotton culture in the season 1900-01 at 169,000 acres, and the yield at 133 pounds of lint cotton per acre. The total value of the agricultural products for 1900 was estimated at \$18,175,227. Live stock, December 1, 1900, comprised horses, 40,615, valued at \$2,159,638; mules, 13,227, \$916,375; milch cows, 29,010, \$422,999; and stock cattle, 452,267, \$2,498,683. The *Bulletin* of the National Association of Wool Manufacturers estimated the wool product for 1900 as follows: Number of sheep, 70,064; wool, washed and unwashed, 280,256 pounds; scoured wool, 162,549.

Industries.—In 1899 there were 470 manufacturers of cigars and 10 of tobacco, and the total production for the calendar year was 147,624,203 cigars; 1,098,660 cigarettes; and 14,168 pounds of tobacco. Quarrying yielded limestone to the value of \$44,002, most of the product being used for road making and for building purposes.

Commerce.—During the year ending June 30, 1900, the imports of merchandise at the ports of Apalachicola, Fernandina, Key West, Pensacola, St. Augustine, St.

Johns, St. Marks, and Tampa aggregated in value \$1,888,242, and the exports, \$17,966,797, making the total foreign trade \$19,855,039, a decrease from the preceding year of \$1,184,730.

Railroads.—The new railway construction reported for 1900 was 76.20 miles, giving the State a total mileage of 3295.35. Switches and side tracks increase this mileage to 3451.02. The total assessed valuation of the railroads in 1900 was \$19,190,302.

Banks.—The total number of national banks in operation on October 31, 1900, was 17, and in liquidation, 10. The active capital aggregated \$1,255,000; circulation, \$642,467; deposits, September 5, 1900, \$6,600,277; and reserve, \$2,318,163. The State banks, June 30, 1900, numbered 23, and had capital, \$742,500; deposits, \$3,489,436; and resources, \$4,643,618. There was one stock savings bank, with depositors, 877; deposits, \$225,395; and resources, \$255,278. Exchanges at the Jacksonville clearing house for the year ended September 30, 1900, aggregated \$12,710,389, as compared with \$11,598,175 in the preceding year.

Finances.—The total assessed valuation of property for the year 1900 was \$96,518,954, a gain of \$2,991,600 in a year. The total tax levy for State purposes was 5 mills. The aggregate receipts at the State treasury for the year 1900 were \$989,058; disbursements, \$936,915; excess of receipts over disbursements, \$52,143. The balance in the treasury, January 1, 1900, was \$318,416, and on January 1, 1901, \$370,559. Of the total bonded indebtedness of the State there is held by individuals only \$190,800.

Education.—The school census of 1900 gives the school population as follows: White, 93,351; colored, 68,077; total, 161,428. There were 2729 teachers, of whom 2084 were white, and 645 colored. In 1899, 22 public high schools reported 58 teachers and 1009 students; 6 private secondary schools reported 23 teachers and 150 students; 2 public normal schools reported 9 teachers and 118 students; and 3 private normal schools reported 11 teachers and 125 students. There were 5 colleges and universities for men and for both sexes, with 77 professors and instructors, 718 students, and a total income of \$73,467.

Penal Institutions and Charities.—On December 1, 1900, the State convicts numbered 778, of whom 674 were negroes. The prisoners were at that time divided into 13 camps, 6 of which were engaged in mining phosphate, and 7 in the manufacture of naval stores. On the date named above the number of patients in the State hospital for the insane was 632. The capacity of this hospital has recently been increased from 300 to 800, and many modern improvements and conveniences have been added. The school for the deaf and blind had an enrolment of 59 for the year ended July 1, 1900. The amount appropriated by the State for the support of this school was \$11,000.

National Guard.—The Florida State troops comprise 91 generals and staff and 1167 infantry. The total number of militia authorized is 1458. The total number in the State liable to military service is 85,000. The State appropriation for military purposes is \$16,000.

Constitutional Amendments.—Four amendments to the constitution were adopted at the regular election in November. Two of these were political, one of them requiring county commissioners to divide counties into five districts and the other allowing a newly created county one representative in excess of the limit fixed for the membership of the House. A third amendment made provision for a State flag, and the fourth, which was the most important, prohibited the creation of any corporation by special act of the Legislature unless such corporation was a university or had for its purpose the building of a ship canal.

Population.—According to the United States census, the population in 1890 was 391,422; in 1900, 528,542; increase for the decade, 137,120, or 35 per cent. The four largest cities, with population in 1900, are: Jacksonville, 28,429; Pensacola, 17,747; Key West, 17,114; and Tampa, 15,839.

Elections.—In the State elections of 1900 the Democratic candidate for governor, William S. Jennings, ran over 2000 votes ahead of the national ticket, receiving 29,251 votes, as against 6438 cast for the Republican nominee, M. B. Macfarlane. Jennings's plurality was, therefore, 22,813, whereas the plurality for the national ticket was about 20,600. S. M. Sparkman and R. W. Davis, the congressional representatives in the 56th Congress, were re-elected in 1900. The Legislature of 1901 will be like the Legislature of 1899, unanimously Democratic, consisting of 32 senators and 68 representatives.

State Officers and National Representatives.—State officers for 1900: Executive—governor, W. D. Bloxham; secretary of state, J. L. Crawford; treasurer, James B. Whitfield; comptroller, W. H. Reynolds; attorney-general, W. B. Lamar; adjutant-general, Patrick Houstoun; superintendent of public instruction, W. N. Sheats; commissioner of agriculture, L. B. Wombwell—all Democrats.

Judiciary: Supreme Court—chief justice, R. F. Taylor; associate justices, M. H. Mabry and F. B. Carter; clerk, B. B. Wilson—all Democrats.

The State officers for 1901 are: Executive—governor, W. S. Jennings; others the same as for 1900.

Judiciary: Supreme Court—same as for 1900.

Congressional representatives for 1900 (56th Congress): S. M. Sparkman (Tampa) and Robert W. Davis (Palatka)—both Democrats.

Congressional representatives for 1901 (57th Congress): Same as for 1900.

Senators for 1900 (56th Congress): Stephen R. Mallory (until 1903), from Pensacola; J. P. Taliaferro (until 1905), from Jacksonville—both Democrats.

Senators for 1901 (57th Congress): Same as for 1900.

FLUORSPAR. The production of fluorspar, or fluorite, in the United States in 1899 amounted to 15,900 short tons, valued at \$96,650. This formed the largest output known, and was an increase of more than 100 per cent. over 1898. Nearly four-fifths of the product came from the newer mines of Caldwell, Crittenden, and Livingston counties, Ky., while the balance was supplied by the workings at Rosiclaire, Ill.

FLYING MACHINES. See AERIAL NAVIGATION.

FOOD. Adulteration.—The United States Pure Food law went into effect August 1, 1900. It is designed to prevent adulteration and false labelling of food products. Many of the States have their own laws with the same design. The Pure Food law of Illinois took effect July 1, 1900, providing that every label on a package of foodstuff shall declare the quality of the contents. The chemist to the Board of Health of St. Joseph, Mo., Dr. E. E. Hunter, reports that he found that jellies, jams, fruit, etc., sold in that State were colored with anilin dyes, evaporated fruit contained oxide of zinc in dangerous quantities, and French peas contained copper. Special legislation was asked of Congress by the National Grange, with which organization sixty agricultural chemists met in November, with a view to protect State trade-marks for dairy products. M. de Boise, American consul at St. Gall, Switzerland, reports that adulteration of food is general in Europe. He states that chocolate is adulterated with mutton tallow, sawdust, and potato meal; honey with syrup, meal, and corn starch; Swiss cheese with potato meal; butter with carrot juice; bread with potato meal; coffee with tan-bark, sawdust, stove rust, and chicory; tea with the leaves of linden, sage, and strawberry; beer with potash, vitriol, alum, licorice, linseed, tartar, poppy heads, chamomile, pine sprouts, chicory, henbane, and wild cherries; wine with potato syrup and cream of tartar. Switzerland is endeavoring to protect herself by special legislation. In Manchester, England, several people have been poisoned by drinking beer, which was found to contain arsenic. This poison had been introduced as an adulterant of the invert sugar improperly used in brewing. The London *Lancet* states that as much as one-fifth of a grain of arsenic is possible in a glass of this beer, and appeals to the government to restrict the manufacture of beer so that only barley, malt, and hops are employed in its production. Such a governmental restriction is in force in Germany. The Chicago Health Department has forbidden the use of formaldehyde in milk, which has been pronounced to be the most dangerous of all adulterants used as preservatives in food.

Milk Inspection in New York City.—As an example of the work of the New York Board of Health the Borough of Manhattan is divided into 9 milk inspection districts. There are 10 milk inspectors, and each district includes about 600 or 700 milk stores. In 1899 these inspectors made 8047 inspections, examined 48,832 specimens of milk, and caused 117 arrests. As an example of the effects of this vigilance, it may be noted that only 84 quarts of milk were destroyed in the year 1899, although 10,000,000 pounds of foodstuffs were condemned in that year by the Health Department. Since 1896 every milk dealer has been required to obtain a permit from the Health Department, which is issued only after satisfactory inspection of the place from which the milk is to be sold. If a dealer has been arrested and convicted twice for selling milk below the required standard, this permit is revoked and the dealer is no longer allowed to continue in business. As a result of this supervision, there has been a vast improvement in the milk supply of New York, although much remains to be improved in the matter of cleanliness. Dr. Betz, of the Health Department, has estimated the comparative amount per capita of milk consumed in the following cities:

London	4	ounces ($\frac{1}{4}$ pint)
Paris	7 $\frac{1}{2}$	" ($\frac{1}{2}$ "
Munich	20	" (1 $\frac{1}{8}$ pints)
New York.....	18	" (1 $\frac{1}{8}$ "

—*Phila. Med. Journal.*

Meat Inspection by United States Authorities.—Inspection of meat for the interstate and foreign trade is conducted every year by the Bureau of Animal Industry of the United States Department of Agriculture. Meat inspection was carried on at 45 localities, and 148 packing houses and abattoirs received the benefit of this work in 1900. Dr. D. E. Salmon, the chief of the bureau, reports that during the year ending June 30, 1900, there were 53,087,994 ante-mortem inspections of cattle, sheep, calves, hogs, and horses made. After slaughtering, 4,861,994 cattle, 6,125,095 sheep, 315,969 calves, 23,428,996 hogs, 5559 horses, making a total of 34,737,613 inspections. Of this number, 61,906 entire carcasses and 30,346 parts of carcasses were condemned and destroyed. The cattle condemned were afflicted with bruises or injuries, abscesses, actinomycosis, tuberculosis, anthrax, peritonitis, pneumonia, septicæmia, cancer, tumors, hydatids, or circumscribed inflammations. The sheep condemned suffered with bruises, abscesses, scabies, tuberculosis, pneumonia, uremia, septicæmia, pyæmia, pleurisy, parasites, tumors, cancer, etc. The hogs condemned had similar diseases, besides hog cholera, swine plague, and cysticercus. Of the condemned animals, 8.1 carcasses per 10,000 were condemned for tuberculosis, and 9.2 per 10,000 for actinomycosis. Of the beeves coming from large abattoirs, only 1 carcass per 10,000 animals was tubercular, while dairy cattle are usually affected by tuberculosis to the extent of 5 per cent. to 10 per cent. Dr. Salmon states that in Europe from 20 per cent. to 50 per cent. of all cattle slaughtered are tubercular. The meat inspection service of the Department of Animal Industry of the United States has been in operation nine years. Upon carcasses or parts of carcasses that pass inspection the officials place tags or brands or stamps. Inspected products for transshipment to official establishments and other places are placed in sealed cars. In 1900 the number of such cars loaded with inspected meat was 69,937. Eight certificates were issued for 472 packages of horseflesh, and 43,631 other ordinary certificates were issued. The cost of conducting the work of ordinary meat inspection for the fiscal year ended June 30, 1900, was \$505,280.52, the average cost of each inspection being 0.95 cent. Microscopic inspection of 999,554 carcasses of hogs was made during the year, and 12,107 microscopic inspection stamps were issued for 253,333 packages of pork. The expenditure for this microscopic inspection was \$154,950.22, averaging 15.5 cents for each carcass inspected. Of 821,693 American animals inspected for export, 1599 were rejected and 415,698 were exported. Of 54,053 Canadian animals inspected for export, 53,970 were exported from American ports, 83 being rejected. Upon landing in London, Liverpool, and Glasgow surviving animals are again inspected by the United States government officials. Control of contagious diseases among cattle and sheep is also attempted by the Bureau of Animal Industry, and an inspection of animals imported is made at ports of entry along the Mexican border and Canadian international boundary line, as well as at the ports of New York and San Francisco. In Massachusetts, New Jersey, Michigan, New York, Vermont, and Maine sixteen quarantine stations are maintained for observation and inspection of imported animals. The biochemic division of the bureau prepares and distributes tuberculin, mallein, serum for hog cholera and serum for swine plague as well as black-leg vaccine and tetanus antitoxic serum. Experiments are being made with reference to the Southern ticks and Texas fever, which results from tick bites.

Meat Inspection in Paris, Berlin, and London.—The following facts are taken from the report of Dr. Henry O'Neill to the Markets Committee of Belfast. All animals intended for food in Paris must be slaughtered at the public abattoirs at La Villette, Grenelle Vangirard, or Villejuif. Meat that passes inspection is stamped "P. P.," meaning Prefecture of Police. Meat brought in from outside the city must be brought through certain toll-gates and inspected at the public abattoirs or at specified markets. Meat unfit for food is either seized and destroyed at owners' expense or is properly treated. Berlin has a similar method, and all meat must bear an official inspection stamp. In London there is no regular inspection of meat, except at Smithfield Market; and all meat, unless it has been condemned by the sanitary authorities, is considered fit for consumption.

Horseflesh as Food.—M. Pflüger, in the *Revue Générale des Sciences*, reports a series of experiments in the use of horseflesh as food, from which it appears that its exclusive use as a diet is injurious. He finds that the intestinal troubles following its exclusive use are prevented by adding the kidney fat of beef or mutton in the proportion of an ounce of fat to two pounds of meat. The water in which horseflesh is boiled should not be used.

An Emergency Ration for the United States Army.—During the fall of 1900 some experiments have been made in the United States Army, in order to determine the value of certain concentrated foods as rations for soldiers sent into the enemy's country beyond a base of supplies where foraging is impossible. Such a ration, to be practicable, must be compact, palatable, healthful, and sustaining, and a single ration must suffice for 24 hours. A board of army officers has prepared a ration

consisting of 2 cakes of sweetened chocolate, 3 cakes of a combined meat and cereal compound, with a small quantity of salt and pepper. The chocolate weighs 4 ounces, the meat 4 ounces, and the cereal 8 ounces; and the ration is packed in a hermetically sealed can, opening with a key. It may be eaten dry or may be cooked. One manufacturer substitutes tea for the chocolate; another also uses tea and employs meat extracts in the food combination. Tests with the ration have been made with 25 troopers in the Comanche reservation in southwestern Oklahoma, where the conditions resemble those of actual war. Measurements and weights of the men were taken twice a day, and their condition was accurately noted while on the march.

A Tropical Ration for the Soldier.—Dr. J. R. Kean, major and surgeon, United States Volunteers, has spent nine years in Florida and Cuba. He is now chief surgeon of the department of Havana and Pinar del Rio, Quemados, Cuba. In December, 1900, Dr. Kean published an article on the tropical ration in the *Philadelphia Medical Journal*, from which the following statements are condensed. Dr. Kean comments on the flexibility of the ration of the soldier under ordinary circumstances, whereby he is allowed to draw some money or obtain some variation in his food on condition of not receiving part of the allowed ration. When not in the field, the soldier may save on pork, bacon, coffee, and flour. In the field his dietary is bacon, biscuit, and coffee with little chance for variation. In all diet, fat, the heat food; protein, the tissue food; and carbohydrate, the work food, are the proximate principles. Atwater says that the average American consumes at work proteid, 125 grammes; fat, 125 grammes; carbohydrates, 450 grammes. Less fats are needed in hot countries than in cold. Besides this, the digestion of the newcomer is weakened by the hot climate, his liver is inclined to torpidity, and he is unable to digest fats thoroughly. Hyperacidity and the formation of toxins result. To preserve nitrogen equilibrium and prevent tissue waste, 40 to 50 grammes of proteids are sufficient under ordinary conditions, and more than this is harmful in hot climates. In the third place, a greater variety of food and an admixture of fresh vegetables and fruits is essential in the tropics. Fourthly, a fair supply of ice is desirable. The latter is included because of the ice-water habit of the American, in part. He is not satisfied with a small amount of water that is not iced, and drinks water in excess, and is apt to drink polluted water if not provided with access to the company ice-water barrel, whose supply can be kept pure. The present ration of the American soldier, besides coffee and sugar components and seasoning components, is as follows: *Meat components*, fresh beef, 20 ounces; *bread components*, flour, 18 ounces; baking powder, $\frac{1}{4}$ ounces; *vegetable components*, beans, 2 $\frac{3}{4}$ ounces; potatoes, 16 ounces; dried fruit, 2 ounces. In place of the fresh beef may be substituted mutton, pork, bacon, salt beef, dried fish, pickled fish, or fresh fish. In place of beans, peas, rice, or hominy may be substituted. In place of potatoes, in part, onions, canned tomatoes, or other fresh vegetables when procurable may be substituted. The following is the proposed tropical ration: *Meat components*, fresh beef, 20 ounces; bacon, 12 ounces; *bread components*, same as present ration; *vegetable components*, rice, 2 $\frac{3}{4}$ ounces; frijoles (or macaroni), 2 $\frac{3}{4}$ ounces; fresh vegetables when procurable, 16 ounces; ice, 32 ounces; coffee and sugar and seasoning components remain as in present ration. In place of beef, mutton or fish may be substituted, 20 ounces of either. In place of bacon, salt beef, dried fish, pickled fish, or canned salmon may be substituted, from 12 to 18 ounces of either. Dr. Kean suggests that in the proposed tropical ration as just now stated wide latitude be given and encouraged in saving and substitution. He suggests saving 8 ounces of fresh beef or of fresh mutton, or all the bacon, salt beef, dried and pickled fish allowed, and obtaining in place of these extra vegetables and fruits; and urges that all the fresh fish issued be used. He calls attention to the fact that white potatoes suffer much during transportation, and urges that sweet potatoes or yams be used where grown. He emphasizes the value of rice and its cheapness. In Cuba he finds the following fresh vegetables reasonably cheap: Sweet potato, white potato (in winter), cabbage, onions, kershaw (pumpkin squash), beets, turnips, yams, plantains, bananas. He would make the vegetable component of the tropical ration consist of rice, 2 $\frac{3}{4}$ ounces; frijoles, 2 $\frac{3}{4}$ ounces (or macaroni, 2 ounces); fresh vegetables in proper variety, 16 ounces, purchased in the vicinity of the post or command. To this list he would add dried fruits. By following such a regimen Dr. Kean believes that disorders of the digestive apparatus, next to infectious diseases the great perils of the tropics, would be largely avoided. See Soson.

FOOTBALL. It is a matter of satisfaction that American football continues to maintain the high amateur standard which has characterized it since it has been one of the leading American sports. Lapses have, indeed, occurred in the colleges, and too much reliance cannot be placed on the amateurism of the athletic club teams; but these conditions are dangers to rather than proofs against the purity of the game at large as now played. It is of interest to note, however, that in Great Britain the popularity of football has led to an open professionalism so widespread

that its best adherents are now leaving the game in large numbers for cricket and lacrosse, the latter being an American game, notable for the amateur spirit which pervades it, and a sport, moreover, which is becoming decidedly popular among Englishmen. In the United States some important legislation was enacted by the Football Rules Committee. The abuses of the side-line privilege at the Yale-Princeton game of 1899 led to a ruling whereby the number of men allowed on the side lines was reduced. The rule requiring that a team, in order to keep possession of the ball, must advance the ball five yards in three downs or retire with it twenty yards having led some teams to carry to an extreme the policy of taking a loss of ground in order to retain the ball, was so amended by the committee that a team is now forbidden to retire with the ball twice in succession. The American football season of 1900 again showed the rise of the second-class college teams to a rank more nearly commensurate with that of the teams which have so long led in the practice of the game. Among the college teams Yale finished first, decisively defeating Harvard, her nearest opponent, in a game which it had been expected would be close and exciting. It is the opinion of some experts that the Yale team of 1900 was, all in all, the best football combination that has yet been seen. Harvard is entitled to second place, in spite of a slump toward the end of the season, largely due to undertraining. Pennsylvania finished third, and Columbia fourth. Columbia, though not unanimously praised on the score of the spirit of her play, earns the credit of having broken into the combination of the "big four" on the record of her play. Fifth place among Eastern teams is due to Princeton, Cornell, and Lafayette, the order differing among various critics. Other Eastern teams of more or less prominence include those of Brown, Annapolis, Hamilton, and Wesleyan, in the order named. West Point, Williams, Amherst, Dartmouth, Trinity, Lehigh, Dickinson, Bucknell, Pennsylvania State, Washington and Jefferson, and the Carlisle Indians were other successful teams. The now established annual West Point-Annapolis game was again held at Franklin Field, Philadelphia, through the courtesy of the University of Pennsylvania, and before a distinguished audience played a close game of clean football, the victory finally resting with the Navy. In the middle West a comparison of the opinions of various critics would seem to give first place to the University of Minnesota, followed by Iowa, Wisconsin, Northwestern, Chicago, Nebraska, Michigan, and Illinois universities. In the South the University of Virginia led, other strong Southern teams being Texas, Vanderbilt, Sewanee (University of South), and North Carolina universities. The South is still second rate in football, but the middle West is rapidly coming into form, as shown by the games played with Eastern teams in 1899 and 1900. On the Pacific coast Stanford defeated California, but the form of neither team was up to the middle-West standard. The record of some important Eastern games follows: Yale lost no games, defeating Harvard, 28 to 0; Columbia, 12 to 5; Princeton, 29 to 5; Wesleyan, 38 to 0. Harvard defeated Pennsylvania, 17 to 5; Columbia, 24 to 0; Brown, 11 to 6; Wesleyan, 24 to 0, losing to Yale. Pennsylvania defeated Columbia, 30 to 0; Lafayette, 12 to 5; Cornell, 27 to 0; Brown, 12 to 0, losing to Harvard. Columbia defeated Princeton, 6 to 5; Annapolis, 11 to 0; Wesleyan, 12 to 0, losing to Yale. Princeton defeated Lafayette, 5 to 0; Brown, 17 to 5, losing to Columbia and Cornell. Cornell defeated Princeton, 12 to 0, losing to Lafayette, 17 to 0, and Pennsylvania. Lafayette defeated Cornell, and lost to Pennsylvania and Princeton. Brown lost to Harvard and Princeton. Annapolis defeated West Point, 11 to 7, and lost to Pennsylvania, 6 to 28. Wesleyan defeated Dartmouth, 16 to 5; Williams, 35 to 0, and Amherst, 17 to 0, and lost to Trinity, 5 to 0, and to Columbia, Harvard, and Yale. The Carlisle Indians played a poorer game than in previous years, but still did good work. They lost to Yale, 35 to 0; Harvard, 5 to 17; Pennsylvania, 6 to 16, and Columbia, 6 to 17.

In the middle West Minnesota and Iowa were not defeated. Minnesota tied with Chicago, 6 to 6, and defeated Northwestern, 21 to 0; Notre Dame, 21 to 0; Nebraska, 20 to 12, and Wisconsin, 6 to 5; Iowa tied with Northwestern, 5 to 5, and defeated Michigan, 28 to 5, and Chicago, 17 to 0. Wisconsin lost one game to Minnesota, 5 to 6, and defeated Notre Dame, 64 to 0; Chicago, 39 to 5; Illinois, 27 to 0. Chicago tied with Minnesota, and lost to Brown, 11 to 6; Pennsylvania, 41 to 0; Iowa, Wisconsin, and Northwestern, 5 to 0, and defeated Michigan, 15 to 6. Michigan tied with Ohio State University, 0 to 0; defeated Notre Dame, 7 to 0, and Illinois, 12 to 0, and lost to Iowa and Chicago. Northwestern tied with Iowa and with Illinois, 0 to 0, defeated Chicago, and lost to Minnesota.

FORBES, ARCHIBALD, LL.D., author and newspaper correspondent, died in London March 31, 1900. He was one of the most prominent correspondents of his time, and to him is largely due the development of the modern method of war correspondence. He was one of the first to set before the public, by the use of the telegraph, "the broad features and the picturesque details of battles, military operations, and all the moving incidents of a campaign." Forbes was born in Morayshire,

Scotland, in 1838, and was educated at Aberdeen University. From 1859 to 1864 he served in the Royal Dragoons, and when in 1870 the Franco-Prussian War broke out he went with the German army to the scene of conflict as a correspondent of the *London Morning Advertiser*, but soon changed to the *London Daily News*. Untiring in his endeavors, he succeeded in being present at nearly all of the great battles, his accounts of which are still remembered as most excellent records of that war. He reported the troublous times of Paris during the Commune, and in 1874 visited the scene of the Tirhoot famine. He then reported the Carlist War in Spain, and in 1876 went to India to write of the visit of the Prince of Wales to that country. In the latter year he was called to the Balkan peninsula by the troubles in Servia, which finally developed into the Russo-Turkish War of 1877. He witnessed and reported the siege of Plevna and the action at Shipka Pass. In 1878 he acted as correspondent in Cyprus, and in that year and 1879 followed the Afghan campaign. Later in 1879 he reported the war in Zululand, and gained much credit in the promptness and accuracy of his despatches. From 1880 to 1882 he delivered lectures on his war experience in Great Britain, Australia, and America. His correspondence was recast and published in book form. Among his works are: *My Experiences in the War Between France and Germany* (1872); *Glimpses Through the Cannon-Smoke* (1880); *The Life of Chinese Gordon* (1884); *Souvenirs of Some Continents* (1885); *Life of William I. of Germany* (1888); *Havelock* (1891); *Barracks, bivouacs, and Battles* (1891); *The Afghan Wars* (1892); *Tzar and Sultan* (1894); *Colin Campbell, Lord Clyde* (in Men of Action series) (1895); *Memories and Studies of War and Peace* (1896); *The Black Watch* (1896); *The Life of Napoleon III.* (1898).

FOREIGN MISSIONS, AMERICAN BOARD OF COMMISSIONERS FOR, the oldest foreign missionary association in the United States. Since its founding in 1810, it has opened fields all over the world, and now sustains twenty missions, in Africa, Turkey, India, Ceylon, Bulgaria, China, Japan, Hawaii, Micronesia Islands, Mexico, Spain, and Austria. The board directs the services of 526 missionaries from the United States and 3472 native workers, and includes under its organization 495 churches, with 52,000 members and 1280 schools of all grades, attended by 59,600 pupils. Contributions from American churches supporting the board amounted during the last year to \$737,957, and native Christians added to this amount \$156,642. The administrative office of the commissioners is located at 14 Beacon Street, Boston, Mass. President, Samuel B. Capen, LL.D.; district secretaries, Rev. Charles C. Creegan, D.D., 105 East Twenty-second Street, New York City, and Rev. A. N. Hitchcock, D.D., 153 La Salle Street, Chicago, Ill.

FORESTRY. See HORTICULTURE.

FORESTRY IN THE UNITED STATES. There are in the United States, according to estimates of the United States Geological Survey, approximately 1,094,500 square miles of forests, or about 37 per cent. of the area of the country, exclusive of Alaska. Of this amount, seven-tenths is in the region between the Atlantic Ocean and the Mississippi Valley, about one-tenth in the interior Western States, one-tenth along the Rockies, and one-tenth on the Pacific coast. On either side of the Rockies are the great plains and the alkali deserts. Coniferous or evergreen trees make up almost entirely the far Western forests, while the prevailing tree of the Eastern regions is the deciduous, or broad-leaf, variety. The fame of the great trees of the Pacific coast and the fact that the Eastern States have so long been settled have done much to make one forget how small an area of woodlands is possessed by the trans-Mississippi country, and how large a part of the East is still covered by forests. Excepting on the prairies, which reach eastward here and there from the Mississippi country, and a few other localities, practically every section of Eastern lands to-day unwooded has been cleared through the agency of man. Of the large remaining Eastern forests, some, through fire, frequent cutting, and other causes, have greatly deteriorated, as exemplified by New Jersey, which has 46 per cent. of its area in woodlands, but which has long since ceased to be a lumber-producing State. On the other hand, there are regions which still contain notable virgin forests, of which the southern Alleghanies and the country about the upper Mississippi and adjacent Great Lakes are examples. The features of the Pacific coast are, in California, the redwoods and the big trees, which are the largest trees known; and in Oregon and Washington, and extending northward through British Columbia into Alaska, great woodland stretches which contain some of the densest forests in the whole world.

Forestry Principles.—It will be seen that the forests of the United States are as yet both extensive and rich, and it might seem that the cry that they are in danger of extinction is an exaggeration. Taking the country as a whole, this is probably true, but it is also a fact that some of our most valuable lumber regions, as in Minnesota, Michigan, Wisconsin, have been seriously depleted of their wealth. As to the annual cuttings in our forests, a round 40,000,000,000 feet of lumber is the

estimate recently quoted from an authoritative source. Most of the white pine has already been cut. The loss from fire probably amounts to over \$20,000,000 a year. In the magnificent forests of Oregon and Washington more timber, it is said, falls by fire than by the axe. Yet in Europe, where scientific forestry prevails, forest fires are almost unknown. With such statistics before us it is unnecessary to consider seriously the statements of those who, led largely by matters of sentiment, have so often misled and antagonized the owners of forest land, and largely offset the lessons which foresters have endeavored to teach. There is, of course, a sentimental side of the forest which appeals to people generally. The beauty of a virgin forest, its antiquity, its sublimity, and tranquillity, mark it as one of nature's greatest works. But love of the forests alone will never bring about forestry. In its final analysis forestry is a piece of cold-blooded calculation, and largely one of dollars and cents. Even where it is desired to preserve the forest covering of important water-sheds, and this, after all, is one of the most useful services of the forest, scientific forestry shows how, by judicious cutting, the forest may continue to supply its quota of timber not only without deterioration, but with an increasing value, owing to the constant removal of ripe timber and of forest weeds—tree weeds—and the gain thereby of more favorable conditions for the growth of the young trees. Dr. B. E. Fernow, of the College of Forestry at Cornell, has estimated that an acre which might be made by forestry methods to produce 100,000 feet of timber, board measure, in 75 years, grows under ordinary conditions perhaps 2000 feet in 300 years. Forestry, then, means not only the preservation of woodlands, but their cultivation and improvement and a conservative use of their products. It relies, on the one hand, upon the unchangeable natural laws for the production of wood crops; and, on the other hand, upon the settled economic laws and the principles of business. For the community of the State it means also the regulation of climatic and physiographical conditions. It is also peculiarly a business for the State, since, in America especially, it must produce value for the future rather than for the present, with a decrease of present possible profits, so far as production is concerned, while only the State can reserve and manage such great areas as may be necessary for the safety of important headwaters. Aside from its scientific treatment of forests, forestry aims to protect them from fire, the most terrible foe of the woodlands of North America; from destructive lumbering; from grazing, which through trampling and the browsing of the young trees, and by causing subsequent fire, is far more destructive than people of the Eastern States can realize; from such natural enemies as snow, wind, insects, and fungi; and from excessive taxation, which puts a premium on the immediate demolition of the forest. Another obstacle to forestry is the low grade of morals which justifies the stealing of anything which belongs to the State. In Michigan it is officially stated that "more than double the amount of timber is stolen from the State lands annually than is stolen by fire." The working of all these principles may be more clearly seen in the consideration of the year's progress.

National Forestry Policy.—By the creation of two new national reserves during 1900 the total area of forests set aside, mainly for the preservation of water-sheds, was brought to nearly 47,000,000 acres. The national parks, which accomplish the same purpose, embrace nearly 3,500,000 acres more. The complaints of Western landowners against the policy of reserving the forests, begun in 1891, were followed by an outcry when President Cleveland largely increased the number of reservations. The greatest clamor came from the sheep-men, whose immense flocks had been driven at will over the public lands. In the succeeding contest, which was carried into Congress, the proclamation establishing the reserves was suspended, but victory finally rested with the friends of the reserves. The bitter opposition of the West has to-day largely changed to an opposite attitude, and the policy of making government forest reservations appears to be firmly established. At the present time the General Land Office administers the public forests (see LANDS, PUBLIC), the United States Geological Survey maps and describes them, and the Division of Forestry co-operates in the work by carrying into actual practice the principles upon which the science and art of forestry rest.

Work of the Forestry Division.—Although the forestry division has no share in the immediate administration of the public forests, it has within the past few years moved toward the place to which the importance of forest preservation entitles it. It alone, among the three departments mentioned, possesses a force of trained foresters, and upon it rests the responsibility for the scientific treatment of the public woodlands. During the fiscal year 1899-1900 the government took the first steps toward the introduction of practical forestry methods in the national forest reserves. At the request of the secretary of the interior, through the General Land Office, the Division of Forestry has undertaken the most important work of preparing working plans for the entire area of the federal forest reserves. Lack of funds made it possible to organize the work on only one reserve during the year—the Black Hills

Forest Reserve in South Dakota—where several hundred thousand acres were studied with the view of introducing conservative lumbering. The last report of the division states that the fiscal year 1899-1900 has witnessed a conspicuously wider and more effective and intelligent interest in forestry matters in the United States than any previous year, furnishing a growing opportunity that should be met at once by an increased government appropriation, if the division is to perform its evident duty. In 1898-99 the division had for the first time offered practical assistance to farmers, lumbermen, and other private owners in the handling of forest lands. Applications for the management of over 1,500,000 acres were received, and nearly a third of this area was given personal attention on the ground. Most of the owners carried out the working plans without further assistance, but active aid was given in 15 tracts, notably in Adirondack lands. In 1899-1900 the applications had grown to cover an area of 51,192,714 acres, which includes, however, the whole area of the federal reserves. During the year personal examinations were made of 2,103,670 acres, working plans were begun upon 1,325,000 acres, plans were completed for 179,000 acres, and 54,000 acres were put under management. Planting plans were prepared for 59 landowners in 11 States; a study of the effect of forest cover on the flow of streams was begun in southern California; studies of forest fires were made in 26 States, and the grazing investigation requested by the interior department for the national forest reserves was inaugurated. Working plans also were begun for the New York State forest preserve. In the section of economic tree planting in relation to the treeless West, work was crippled by lack of funds, but the investigations relating to commercial trees were continued and extended, and the studies in the history of forestry produced important results, now ready for publication. The commercial trees studied included the redwood, red fir, Western hemlock, Southern long-leaf pine, Adirondack balsam fir, Western yellow pine, Southern loblolly pine, yellow poplar, black and shellbark hickories, red and white cedars, cypress, and four species of oak. A history of forestry in New York and a summary of State forest laws in force were completed, and material gathered for the forest histories of Pennsylvania, Maine, New Jersey, Massachusetts, Vermont, Wisconsin, Michigan, California, and several Southern States. Among bulletins issued were a second edition of the *Primer of Forestry, Part I.*, by Gifford Pinchot, and a history of the California big trees.

Work of the Geological Survey.—The work of the third department of the government having to do with matters relating to American forests has already been touched upon in some of the estimates given regarding the extent and character of our woodlands. The annual reports on forests sent out by the survey are of great interest, and discuss very completely the geographic studies carried on, and the topographic maps which accompany them show with accuracy the distribution and character of forests over those parts of the country considered during the year. The value of this work is evident, since, according to the director of the survey, such an elementary fact as the extent of American woodlands is known only in a broad, general way, except for those limited areas mapped in connection with topographic surveys; of the amount of standing timber available for our use, we know almost nothing. Up to July 1, 1899, according to the latest available report, 15 of the national forest reserves had been examined by the geological survey—namely, the Battlement Mesa, Big Horn, Bitter Root, Black Hills, Flathead, Pike's Peak, Plum Creek, Priest River, San Bernardino, San Gabriel, San Jacinto, South Platte, Teton, Washington, and White River Plateau reserves, besides partial examinations of the Mount Rainier, Olympic, and Yellowstone reserves—in all about 30 per cent. of the area of the national reserves. A table given in the article LANDS, PUBLIC, shows the various reserves in about a dozen States and Territories. Washington has a larger proportion of its area reserved than any other State, the amount being about one-fifth, or a quarter of its forests; South Dakota has about the smallest, 2 per cent.; but this embraces over three-quarters of its forests. The proportion of forests reserved from the aggregate woodlands of the reservation States is about 28 per cent.

State Forestry.—Colorado, California, Kansas, Maine, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, and Pennsylvania exercise control of a more or less general nature over their forests. New York and Pennsylvania lead in the protection of their forests. Both are adding to their lands, the former to preserve the water-sheds of the Hudson, Black, and Mohawk rivers, and the reservoirs of her canal system; the latter to protect the headwaters of the Ohio, Delaware, and Susquehanna rivers. These two States and Minnesota, Maine, and New Hampshire have the best fire laws. In New York each forest reserve township has a corps of fire wardens, and these may call when necessary upon any citizen of the State to aid in fighting the forest fires. Minnesota has laws somewhat similar. It is of interest to note that Maine, with an annual appropriation of only \$400, is in this list. Considerable forestry interest is being aroused in Michigan; but Wisconsin, though as much in need of forestry as

any State in the Union, has gone back, having abolished its State commission. The same is true of California, but in both these States active forestry associations are gradually moulding public sentiment.

An inclusive review of State forestry work is impossible within the limits of this article, but a brief discussion of results achieved in characteristic fields will illustrate the present status of active State forestry. The amount of land acquired by New York up to September 30, 1900, for its Adirondack and Catskill preserves was 1,290,987 acres for the former and 79,941 acres for the latter, a total of 1,370,928. These reserves, though embracing tracts of considerable extent, contain also many scattered lots, over 5500 in all. It is intended in time to join these by the purchase of intervening lands, obtaining for the Adirondack Park a final tract of over 3,000,000 acres. The latest available statistics of timber taken from the Adirondacks (1899) shows a cutting for the year of 447,747,247 feet, of which 343,772,114 feet was of spruce, a little over half of it for pulp-mills; 46,545,772 feet hemlock, 33,132,807 feet pine, and 24,296,554 feet hardwood, in addition to 33,619,000 feet of wood used for shingles and 49,329,090 feet for lath. The most important work of the year was the progress of the experiments carried on by the Cornell Forestry School; the preparation of working plans for the State forests by the United States Division of Forestry, carried on through investigations about Racquette Lake; and the pursuance of the forestry work inaugurated the previous year in the Webb and Whitney preserves. A private petition to lumber on the reserves of the McIntire Iron Company (Tahawus Club), which contain some of the finest scenery and forests in the wilderness, was denied. Of the 127 fires reported during the year, 47 did no damage; 14,893 acres were burned at a loss on standing timber of \$12,499. Much of the damage was in "second-growth" woods. There are 758 fire wardens in the two principal forest regions; an aggregate period of 3101 days was spent by the men ordered out, the expenditure being \$6300. One man lost his life while fighting a forest fire in the Catskills. The Adirondacks were almost free from fires in 1900. About \$2208 in fines was collected for timber stealing on State lands. In Pennsylvania the State had acquired up to September 30, 1900, about 98,370 acres of forest lands, with 15,544 acres awaiting approval. The lands are situated in Elk, Lycoming, Clearfield, Clinton, Pike, Cameron, Tioga, Centre, and Mifflin counties.

Among the most interesting and elaborate reports are those prepared by the State commissioners for Michigan (appointed 1899), Minnesota, and New Jersey, which are of no little value in developing public opinion. In the prosecution of this work in Michigan an interesting brochure of twenty-four pages was issued early in 1900. The annual report of the commission is a volume of one hundred and thirty pages, devoted to a very careful exposition of the auxiliary questions that arise in connection with the crystallization of the newly inaugurated State forestry policy. To strengthen the propositions which look to legislative action there is a carefully prepared series of articles by experts, touching upon the various phases of the forestry question. Some of these are as follows: *Relationship Between Forestry Growth and Character of Soils; Forest Succession; Distribution of Michigan Trees; Forest Possibilities of the Jack Pine Plains; Trespass Problem; Rights of Telephone and Telegraph Companies; Tax Land Titles; Distribution of Rainfall in the State; A State Forestry Preserve; the Railroads and Reforestation; Climatic Adaptation of Michigan to the Work of Reforestation; Relationship of the Agricultural College Work to the Problem of Reforestation; Duty of the University in Connection with the Michigan Forestry Problem; Forest Fires; Forestry and Lumbering; Pulp Industry as a Factor in Reforestation; Economics of Modern Methods of Lumbering; Duty of the State in Providing for the Future; Future Status and Powers of the Michigan Forestry Commission.*

The forests of Minnesota now include about 52,000 square miles, or 66 per cent. of the State. The cutting of pine, the great timber tree of Minnesota, has been going on steadily for 50 years without regard to reproduction. Fully \$100,000,000 worth has been cut, and \$25,000,000 worth more has passed to private persons. Of the original pine forest, the greater part has been consumed, and most of the remainder has passed into private hands. For several years the annual cut of pine has been 1,500,000,000 feet, worth \$5,000,000 as it stands. About 1,200,000 acres of forest land in scattered lots, not all pine, belong to the State, two-thirds of which was given by the federal government for schools, and one-third for the State university and other purposes. The permanent school fund acquired therefrom to date is nearly \$12,500,000. Seven-twelfths of the State forest land has been partially or wholly lumbered, and is being gradually sold. It is now proposed to retain such land, which is largely unfit for agriculture, and the State commission urges further the retention of the whole non-agricultural region of northeastern Minnesota, thus solving the problem of Minnesota—the saving of its pine forests. All forests make smaller demands than ordinary crops on the fertility of the ground, and pine will grow in less fertile soil than most hardwoods. Thus, the most economical use to

which the State can put its northeastern country is forestry, and that section may be made a natural nursery for the protection and propagation by scientific forestry of her staple product, pine. The United States owns several million acres of such non-agricultural land, which should be withdrawn from the market. It is in a part of this tract that an effort is being made to establish a national park, including lands in the Mississippi, Leach Lake, Lake Winnibigoshish, and Cass Lake Indian reservations, and embracing some of the most picturesque Minnesota scenery, amounting in all to about 830,000 acres.

Problems of a different kind concern New Jersey, which has long since ceased to be a lumber-producing, though not a forested, State. The total area of her woodlands amounts to about 2,069,819 acres, or 46 per cent., much of it in scattering tracts. In southeastern New Jersey there is a tract known as The Pines, embracing 1,200,000 acres, the next largest continuous forest (hardwoods) being in the Blue, or Kittatinny, Mountain region. Progressive deforestation continued from the settlement of New Jersey up to about 1860, when very little of the original forest remained. It is estimated that to-day there is considerable timber of from 35 to 50 years of age, the approximate total value of the forest of the State being placed at about \$41,259,000, or \$20.60 per acre. It is believed that, on the whole, the forest is in better condition than during 1850-60, the period of greatest deforestation. In that period large demands for charcoal were made by the iron furnaces and forges then scattered all over northern New Jersey; anthracite coal also was not in general use; and, thirdly, inferior transportation facilities made the neighboring cities dependent upon near-by fuel and timber supplies. The chief products of New Jersey forests are now piling, posts and poles, ties, fencing, cord-wood, and the like; and the State geological survey estimates that at present not 2 per cent. of the forest is cut annually. A fairly mature forest growth seems assured, therefore, so far as immunity from the axe is concerned, and the problems of the State relate mainly to the improvement of the present wood crops and the conservation of water supplies, which in The Pines and in the Highlands sections are of considerable importance. The latter region, running into New York State, includes part of the watershed claimed by the famous Ramapo Company of New York (see New York, paragraphs Ramapo Water Company and New York Water Supply), whose name was taken from the section. The greatest present danger is not from cutting, but from fire. This is less grave in the deciduous forests of the Highlands, but in The Pines 100,000 acres are often burned over by great fires in a single season. Owing to these fires and the heavy cutting in the past, a very large proportion of the timber is of little value, the forest probably yielding only a third as much wood as it might, and that being cord-wood. A valuable water supply is threatened, besides, and extensive shifting of the sandy soil by the wind brought about. Conditions do not seem to favor State control, but protection of the property seems a State duty, and plans are now being discussed for a system of fire-breaks, which may, perhaps, be made public roads.

American Forestry Schools.—In Germany, nine efficient forestry schools exist, four of them being connected with universities. In the United States, the establishment of such schools is directly the result of the recent rise of interest in forestry matters, and the crying need for trained specialists to work in this long-neglected field. The second forestry school to be established in the United States was opened at Yale University in the fall of 1900, being made possible by a gift of \$150,000 from Mr. and Mrs. James W. Pinchot and their sons, A. R. E. and Gifford Pinchot (chief forester of the United States Division of Forestry). The Yale Forest School has had placed at its disposal for practical forest instruction a tract of woodland in Pike County, Pennsylvania, on the Pinchot estate, Gray Towers, for a period of 21 years. Large tracts in the Adirondacks and the White Mountains have also been placed at the school's disposal by Mr. William Rockefeller and the International Paper Company, and the use of Maltby Park, about 400 acres, has been given for field work near home by the New Haven Water Company. Graduates of colleges or scientific schools of high standing will be admitted without examination, provided they show the requisite knowledge of botany, geology, and inorganic chemistry. For all others the entrance conditions require a knowledge of algebra, geometry, and plane trigonometry; botany, geology, chemistry, and physics; and German or French, English, and political economy. The regular course is two years, and leads to the degree of Master of Forestry. The curriculum furnishes about 37 courses of instruction, in introductory forestry, silviculture, forest measurements, general plant morphology, forest botany, mineralogy, zoology, elementary petrology, forest physiography, and meteorology, state and national forestry, forest hydrography, origin and nature of soils, surveying and field engineering, forest management, forest technology, lumbering, forest protection, forest history, jurisprudence, diseases of trees, forest administration, forest laws, and forest roads and trails. Serious field work will begin in the last half of the second year. A two-months summer

school will be conducted in the Pennsylvania tract for those practically interested but unfitted by training for the regular course, possible or deficient students in the regular school, and advanced students desirous of doing special work. The faculty includes H. S. Graves, Pinchot professor of forestry and dean of the school, and nine other professors and instructors, besides several special lecturers. The school, as at Cornell, is devoted not only to instruction but to research. Seven students were registered in the new school. The record of each year's work in this early period of America's forest schools is of considerable importance. At the New York State College of Forestry at Cornell, during the year 1899-1900, 11 students pursued the regular four-year course, and 6 special students pursued the one, three, and four-years courses respectively. In addition, a large number of students from other departments of the university work in the school, 45 in the fall, 53 in the winter, and 25 in the spring. The work of the junior and senior classes was transferred in the spring to the college forest in the Adirondacks. A course of lectures on fish and stream protection and fish culture—the first that has been attempted in the United States—was given in the woods by United States Ichthyologist Banton W. Evermann. Professor Evermann will add in 1901 a course on game preservation. The work in the college forest during the year was necessarily mainly that of laying foundation for the future, and included surveying and stock-taking, some road-building, the opening of fire-lines, the clearing of burned tracts and their preparation for planting, and the propagation of seedlings. About 1,000,000 seedlings of white pine, Douglas fir, Norway and Siberian spruce, Scotch pine and larch came through the winter. The most important development in the management has been the conclusion of a fifteen-year contract, under which the entire crop of hardwoods, as far as it is desirable to cut it, has been sold to a manufacturer of staves and wood-alcohol, who has been induced to establish factories on the property. The old hardwood timber in the Adirondacks is frequently defective, and it is the policy to supplant it by a young, vigorous crop of more valuable species. It is thought that for that region the conifers, especially white pine and spruce, will be most valuable. In carrying out the contract logging operations on a large scale have become necessary. Thus the college has already justified its existence by becoming, while the promoter of scientific forestry and conservative lumbering, a self-supporting institution. And, while constantly cutting, it is so carrying on its work as to keep the tract a permanent forest.

The proposed establishment of a school of forestry at the University of California is referred to by the president in his annual report as an immediate duty. The undertaking is not favored, however, without the assurance of an annual income of from \$20,000 to \$30,000. The California forestry commission was abolished in 1892, and two experiment stations for forest growth were handed over to the university with wholly insufficient appropriations, so that they have been barely kept alive at the expense of the university. In the discussion of forestry schools mention should be made of courses offered at what is known as the Biltmore Forest School, on the Vanderbilt estate, near Asheville, N. C., and of the practical forest studies afforded student assistants in the United States Division of Forestry. Certain forest courses are given in a number of agricultural colleges also, but these are related rather to horticulture (*q.v.*) than to forestry proper, whose basis is more economic than scientific. No small factor also in popular forestry education are the forestry associations, chief of which is the American Forestry Association.

Private Forestry.—The extent and growth of private forestry has already been shown in part. In spite of the fact that national and State government of forests is of the first importance in protecting the interests of the people at large, the fact remains that the majority of forests must continue to remain private property. It is most encouraging to note, therefore, the growing interest of private owners, and to observe that corporations, like the International Paper Company, are beginning to introduce practical forestry in the management of their woodlands. It should be remembered that practical forestry in the United States began on private lands, at the Biltmore estate of Mr. George Vanderbilt. The offered assistance to private owners by the United States Forestry Division now makes it possible for private owners everywhere to successfully inaugurate business-like methods at a comparatively small expense.

In the preparation of this article free use was made of reports furnished by the United States Geological Survey, land office, and forestry division, the Cornell and Yale forestry schools, various State geological and forestry commissions, and several forestry associations.

FORMALDEHYDE. See Food.

FORMOSA, an island in the Pacific now belonging to Japan. It is situated north of the Philippines and crossed by the Tropic of Cancer. It covers an area of 13,458 square miles, and its population in 1897 (including Japanese and Europeans) was

2,797,543. The inhabitants are in a very low state of civilization, and many of them still practise cannibalism. The soil is remarkably fertile, and a considerable part of it is covered with camphor forests, which make Formosa the largest producer of camphor in the world. The largest city on the island is Tainan, and the principal ports are Tamsui, Anping, Lukong, Kiu-kong, and Kelung. The seat of the government is at Taipei. The principal products of the island are tea, camphor, tobacco, indigo, and fruits. The production of camphor was made a government monopoly in August, 1899, and its average output for the last four years was over 6,000,000 pounds. The total amount spent by the government on the camphor industry (including cost of raw material) is given in the budget for 1900 as 2,127,611 yen, while the proceeds for the same year are estimated at 3,455,035 yen, thus leaving a profit of 1,327,424 yen, as against 400,000 yen, the amount received by the government under the old system of production. The yen is equal to 49.8 cents. The exports for 1898 amounted to 12,827,190 yen, against 12,759,294 in 1897, and the value of imports reached the sum of 16,879,190, against 12,659,298 in 1897, and 8,631,001 in 1896. The greater part of Formosa's trade is with China, whose exports and imports to and from the island amounted to 10,103,054 and 10,872,751 yen respectively. The chief article to import is opium. Politically the island is a colony of Japan, to which it was ceded by China at the close of the China-Japanese War in 1895, and is governed by a governor-general appointed by the Japanese government. For purposes of administration it is divided into 6 divisions (3 "Ken" and 3 "Cho"), each governed by a chief magistrate. The revenue for 1899-1900 was 17,328,812 yen, and the expenditure 17,046,518 yen. There is a railway line between Takow and Kelung and another one connecting Tainan with Taipei is in process of construction.

FOSSIL BOTANY. During the past year there have appeared several important works and papers bearing on this subject. Among these may be mentioned one by David White on the *Fossil Flora of the Lower Coal Measures of Missouri*, forming Monograph 37 of the United States Geological Survey. This work is to be looked upon, perhaps, as one of the most important yet published on palæozoic plants in this country. A second work by the same author is on *Fossil Plants from the McAlester Coal Field of Indian Territory*, and treats of the plants found in the southwestern margin of the carboniferous basin in that region. In this work it is shown that the carboniferous beds in which these fossils are found agree in stratigraphic position with certain other beds in Great Britain and on the border of France and Belgium. Ward in a paper on the *Status of the Mesozoic Floras of the United States* (twentieth report United States Geological Survey), brings together all that is known up to the present time concerning the Triassic and Jurassic floras of the United States. A number of new genera and species are described, including several Jurassic pines from South Dakota.

FOSTER, VERE HENRY LOUIS, the philanthropist, died December 21, 1900. He was born in 1819 at Copenhagen, where his father was British minister. After graduating from Oxford he was in diplomatic service at Rio Janeiro and Montevideo. In 1847 he visited Ireland, and became so deeply interested in the condition of the people who were then suffering greatly from the failure of the potato crops that he devoted the rest of his life to their social advancement. He made three voyages to America as a steerage passenger in order to give Parliament practical information about methods of improving the vessels, and during late years, both by subscriptions and at his own cost, he assisted the emigration of nearly 25,000 young women. Extensive improvements were introduced by him into the premises of the Irish schools. Mr. Foster compiled a system of writing, lettering, drawing, and painting books now in use in Great Britain, and edited *The Two Duchesses*, consisting of correspondences between eminent persons relating chiefly to the events from 1777 to 1846.

FOX, JOHN, JR., whose *Crittenden* was one of the notable novels of 1900, was born in Bourbon County, Kentucky, in 1863. He studied for a time at Transylvania University, and graduated from Harvard in 1883. After a few years of journalism he travelled for his health in the Southern States and California. Later, assuming charge of an investment company at Cumberland Gap, he devoted his leisure time to the study of the mountaineer—his origin, history, and peculiar characteristics. Some excellent stories of mountain life were the result. *A Mountain Europa* and *A Cumberland Vendetta* preceded the story by which John Fox is best known—*The Kentuckians*. During the Spanish-American War he was correspondent for *Harper's Weekly* in Cuba. At the same time he was storing up material for his last novel, *Crittenden*, which contains a bold and colored description of the war. In not being so distinctly localized, the story marks a change in Mr. Fox's literary work; the more general traits of the Southerner, not only of the Kentuckian, are studied. A new novel by the same author, *The Little Shepherd of Kingdom Come*, is shortly to be published, and two volumes of short stories, the

one mountain tales and the other sketches of the chase and sport in the mountains of Kentucky.

FOX-PITT-RIVERS, AUGUSTUS HENRY LANE, F.R.S., lieutenant-general in the British army, archæologist, and anthropologist, died on May 4, 1900. He was born in 1827, and served in the Crimean as an officer of the Grenadier Guards and on the staff. He became an authority on the subject of musketry, and was instrumental in establishing and increasing the collection of ancient weapons in the military school at Hythe, where he lectured. He early commenced collecting objects illustrating the evolution of handicraft, and so arranged the collection that many interesting conclusions could be drawn by applying the theory of evolution to articles made by man. In 1880, on the death of the sixth Baron Rivers, Mr. Lane-Fox succeeded to large estates in Wiltshire and Dorsetshire, and took the name of Pitt-Rivers. He soon afterward commenced excavating at the earthworks and tumuli of Cranborne Chase, and in 1887 published the result of his investigations. He erected a new museum at Farnham, in Dorsetshire, to which, in addition to the relics he had excavated, he gave from time to time extensive collections illustrative of general ethnography and archæology. General Pitt-Rivers also restored a thirteenth century house at Tollard Royal, near Farnham, which he converted into a museum for the purpose of showing the rise of the art of painting. He was a fellow of the Royal Society, a member and ex-president of the Anthropological Institute, and a vice-president of the Society of Antiquaries.

FRANCE has an area, including Corsica, variously estimated at 204,199, 205,996, and 207,134 square miles.

Population.—The official census of 1896 gave France a population of 38,547,975. If we add 217,860, the excess of births over deaths for the years 1897, 1898, and 1899, and subtract 15,000 as the average French emigration for a period of three years, the approximate population of France in the beginning of 1900 would be 38,745,000. In 1896 there were 1,027,491 foreigners in the country. The largest cities are Paris (1899), 2,511,834, a decrease of 25,000 since 1896; Lyons, 446,028; Marseilles, 442,239; Bordeaux, 256,906; Lille, 216,976; Toulouse, 149,963; St. Etienne, 136,030; Roubaix, 124,661; Nantes, 123,902; Havre, 119,470; Rouen, 113,219; Rennes, 107,963. There is no religious census in France, but the stipends granted by the state to all denominations numbering over 100,000 was divided, in 1900, in the following proportion: Catholics, 41,045,923 francs; Protestants, 1,495,100 francs; Jews, 206,300 francs. French writers have been greatly alarmed by the fact that the population of France for the last ten years has been practically stationary, while England and Germany, with approximately equal populations in the beginning, have increased at the rate of half a million a year. Putting births to the credit of the nation and deaths to its debit, the accounts since 1890 have run as follows: On the right side, 1893, 7000; 1894, 39,000; 1896, 93,000; 1897, 108,000; 1898, 33,000; 1899, 75,000. On the wrong side, 1890, 38,000; 1891, 10,000; 1892, 20,000; 1895, 17,000. In 1899 the deaths exceeded the births in 43 out of 87 departments. In an article in *L'Economiste Français*, M. Pierre Leroy-Beaulieu points out the following facts. In 1801 the birth rate was 33.1 per 1000; in 1831 it had fallen to 30.3; in 1872 it was 26.8; in 1899 it had sunk to 22.3. All nations in Europe rank above the 30 mark, excepting England, Belgium, Switzerland, and Sweden, and of these the first three range about 29 per 1000, while the last counts only 27, but still 5 above France. The abnormally low birth rate is especially marked south of the Loire; there 11 departments have a birth rate of less than 18 per 1000, 4 departments less than 16, and one, Gers, stands as low as 12.5. The writer finds the cause of this deterioration in the growth of the democratic ideal, wealth, which brings about the elimination of the family for reasons of thrift. He points out that the same phenomenon is occurring in other nations as advanced in industrial development as France—England, for instance, where the birth rate from 1874 to 1876 was 35.9, and from 1897 to 1899, 29.5, or Scotland, which in the same period has sunk from 35.5 to 30, or Australia, whose birth rate was 39.9 in 1866-70, and 27.2 in 1896-98. In seeking for a remedy against this unfavorable balance between births and deaths, Beaulieu finds the only efficacious one in a decrease of the rate of mortality, to be sought for through perfected sanitation. The taxing of bachelors and childless couples would be ineffectual; but he proposes the exemption of the eldest of four sons from military service, and advocates that the possession of three children be made a qualification for employees of the government in the administration, on the railroads, and in the forests.

Government.—France is a republic under a constitution adopted September 4, 1870, and modified on six different occasions before 1890. The law-making power is vested in a bicameral legislature, the upper house being called the Senate, and the lower the Chamber of Deputies. The executive power rests in the president and his ministers. The Chamber of Deputies is composed of 584 members, elected for a period of 4 years, by universal suffrage, from the various departments, each department being divided, for election purposes, into *arrondissements*, of which each

chooses one deputy. The senators, 300 in number, are chosen by the municipal councils, deputies, senators, general councillors, and district councillors of each department. They hold office for 9 years, one-third retiring every three years. There are at present 16 life senators, selected by the National Assembly. Bills may originate in either house, but financial bills must come from the Chamber. The two houses in joint session elect the president of the republic, who holds office for seven years, and is aided in his executive work by a council of ministers responsible to the Chamber. For purposes of local administration France is divided into 87 departments, governed by prefects. The municipal government centres in the *Commune*. The president now in office is M. Emile Loubet, elected February 18, 1899. The composition of the ministry is as follows: Premier and minister of interior, M. Waldeck-Rousseau; justice, M. Monis; foreign affairs, M. Delcassé; finance, M. Caillaux; war, M. André; navy, M. Lanessan; public instruction, worship, and fine arts, M. Leygues; public works, M. Baudin; agriculture, M. Dupuy; commerce, industry, posts and telegraphs, M. Millerand; colonies, M. Decrais.

Instruction.—Primary and secondary education are carried on partly by the state, partly by Catholic organizations. Higher education is exclusively in the hands of the state. In 1898 the public schools were attended by 4,177,590 children, of whom 390,567 received clerical instruction. The private schools in the same year were attended by 1,357,535 children, of whom 1,230,206 went to Catholic institutions. In the national lycées 52,372 students were enrolled, and in the communal colleges 33,949; while 77,370 pupils studied at private high schools, seven-eighths of them in Catholic seminaries. The universities give courses in letters, theology, science, law, medicine, and pharmacy. In 1899 the attendance was 26,491. The chief universities of France are those of Paris, 12,171 students (the largest in the world); Lyons, 2465; Bordeaux, 1647; Montpellier, 1446; Lille, 1141; Nancy, 1137; Rennes, 1057.

Education.—A decree of the minister of public instruction in France simplifies French syntax for the purpose of freeing the elementary schools and state examinations from the requirement of certain niceties of syntax which, being difficult for the young mind to comprehend, are, at the same time, not necessary for a reasonably clear expression of ideas. The decree was framed on the basis of the recommendations of a committee of the French Academy, containing, among others, two members, Gaston Paris and Octave Gréard; and has been much commended by the educational world, though censured by others, notably the editor of the *Revue des Deux Mondes*, M. F. Brunetière. (A translation of the text of the decree is given in the *Educational Times*, and reprinted by *Education*, December.)

Finance.—Revenue in France is derived from direct taxation (lands, buildings, furniture, doors and windows, patents and business licenses), indirect taxation (registration stamps, customs, income tax, etc.), monopolies and state enterprises. In 1896 the revenue amounted to 3,436,128,381 francs; in 1897, 3,528,077,944 francs; in 1898, 3,452,367,794 francs; in 1899, 3,496,863,520 francs. The official budget for 1900 adopted April 13, 1900, ran as follows:

L RECEIPTS.

		France. Francs.	Algeria. Francs.
Direct.	Direct taxes.....	477,944,167	3,724,483
	Native contributions.....		8,189,863
	Assimilated taxes.....	37,777,149	220,985
	Registration.....	533,085,000	3,941,030
	Stamps.....	184,536,200	4,246,900
	Bourse operation.....	5,104,500	
	Customs.....	445,148,850	13,425,030
	Income tax.....	70,647,500	205,000
	Indirect contributions.....	659,867,000	6,863,500
	Sugar.....	182,982,500	
In-direct.	Monopolies and state enterprises.....	716,825,360	5,583,600
	Domains.....	52,523,300	4,885,000
	Various receipts.....	56,801,180	1,225,970
	<i>Recettes d'ordre</i>	68,771,564	3,405,610
	Grand total of receipts.....		3,547,932,981

II. EXPENDITURES.

Interest on public debt.....	1,252,653,162	.....
President and legislature.....	14,075,560	.....
Ministries.....	1,765,077,545	54,170,362
Administration and collection of revenue.....	404,508,755	15,839,662
Reimbursements.....	40,491,162	.....

Grand total of expenditures.....3,547,863,008

The budget submitted for the year 1901 contained these estimates: Total receipts, 3,551,570,497 francs, including 483,069,335 francs direct contributions. Expenses, 3,551,292,378 francs, both exclusive of Algeria. During the first six months of 1900 the indirect taxes amounted to 1,409,615,600 francs, a gain of 34,682,900 over the corresponding months for the preceding year. The national funded debt of France, the largest in the world, amounted on January 1, 1900, to 30,055,398,000 francs.

Production—Agriculture.—France is the chief wheat-growing country of Europe and the first wine-growing country of the world. The mulberry tree is extensively cultivated, and beet roots, olives, and cider apples form a very important part of the annual crops. The official statistics for 1898 give the year's production as follows: Wheat, 363,536,870 bushels, raised on 17,207,330 acres of ground, and worth 2,513,980,571 francs; rye, 66,762,015 bushels, on 3,644,515 acres, worth 309,605,031 francs; barley, 46,882,656 bushels, on 2,012,538 acres, worth 183,114,306 francs; maize, 23,498,711 bushels, on 1,387,933 acres, worth 103,804,319 francs; buckwheat, 21,472,713 bushels, on 1,407,934 acres, worth 81,025,726 francs; oats, 278,306,080 bushels, on 9,606,024 acres, worth 881,748,683 francs; potatoes, 13,042,590 tons, on 3,812,647 acres, worth 646,122,475 francs; beet roots, 11,533,734 tons, on 1,077,652 acres, worth 203,747,076 francs; clover and grass, 27,235,495 tons, on 16,682,905 acres, and worth 1,194,436,344 francs. That same year 4,073,426 acres yielded 838,237,615 gallons of wine; cider apples were produced to the value of 103,329,623 francs; nuts, 48,341,000 francs; and olives, 24,427,499 francs. In the beginning of 1899 the farm animals in France comprised 2,894,379 horses, 208,227 mules, 361,778 asses, 300,840 bulls, 1,815,990 oxen, 6,473,489 cows, 20,961,610 sheep, 5,144,840 young cattle, 1,121,658 goats, and 6,230,966 hogs. The quantity of milk produced was 2,167,224,659 gallons of the value of 1,235,300,157 francs; 15,404,699 animals yielded 91,616,562 pounds of wool, worth 61,166,448 francs. In 1899, 4,244,335 acres brought forth 1,079,613,800 gallons of wine; and the total yield, including that of Algeria and Tunis, amounted to 1,391,560,304 gallons. The great increase in the yield of wine during the last two years is due to the fact that means have at length been found for combating the noxious phylloxera, which for nearly 30 years devastated half the vineyards of France. By grafting California shoots on the mother plant the work of the pest is rendered practically harmless, and the vine is preserved. Though steadily increasing her manufactures of silk, France is descending rapidly as a producer of raw silk. In 1871 it raised 37 per cent. of the world's output, in 1899 only 9 per cent. The yield for the last six years from 1894 to 1899 was as follows: 1894, 73,147,000 francs; 1895, 77,007,000 francs; 1896, 77,200,000; 1897, 77,972,000 francs; 1898, 80,095,000 francs; 1899, 87,043,000 francs. In 1899 the wheat crop amounted to 365,942,244 bushels, on a surface of 16,419,723 acres. The official estimates for 1900 make the yield of wheat only 297,854,244 bushels (17 + bushels to the acre, as against an average of 21 bushels to the acre in 1899). The country has had to draw on its accumulated stock for 20,000,000 bushels, but will not be forced to resort to importation. The rye crop is estimated at 62,717,568 bushels, as against 68,237,794 bushels for 1899.

Minerals.—France annually produces about 32,000,000 tons of coal and consumes 42,000,000, importing the difference from England and to a small extent from America. In 1897 there were mined 30,797,900 tons of coal and lignite and 4,582,000 tons of iron ore. The output of pig iron amounted to 2,484,200 tons, of wrought iron to 784,000 tons, and of steel to 1,325,213 tons. In 1898 the figures ran: Coal, 32,356,096 tons; pig iron, 2,525,075 tons; wrought iron, 736,410 tons; steel, 1,174,075 tons. In 1899, coal and lignite, 32,933,780 tons; pig iron, 2,567,388 tons; wrought iron, 812,755 tons; steel, 1,253,701 tons. The first half of 1900 yielded the following amounts: Coal and lignite, 16,529,887 tons, an increase of 146,104 tons over the corresponding period in 1899; pig iron, 1,341,988, an increase of 84,947 tons; wrought iron, 410,803, a decrease of 9360 tons; steel, 661,242 tons, an increase of 32,023 tons. In 1898 there were 12,368 men engaged in the deep-sea fisheries.

Commerce and Manufactures.—The commerce of France is classified under the two heads of general commerce and special commerce. General commerce includes the total volume of exports and imports; special commerce designates all exports produced in the country and all imports consumed there. The chief articles of import are raw wool, cotton and silk, foodstuffs, machines, metals, oils, and timber; the principal commodities exported are woollen, silken and cotton tissues, wine, manufactured specialties, robes, confectionery, and flowers. In 1898 the general commerce amounted to 5,582,100,000 francs imports and 4,673,500,000 francs exports; the special commerce ran up to 4,472,500,000 francs imports and 3,510,900,000 francs exports. This stream of trade poured through the various ports of France in the following amounts: Marseilles, 1,951,000,000 francs; Havre, 1,693,000,000 francs; Paris, 733,000,000 francs; Bordeaux, 676,000,000 francs; Dunkerque, 663,000,000 francs; Boulogne, 473,000,000 francs; Dieppe, 254,000,000 francs; Calais, 243,000,000 francs. In 1899 the special exports reached 3,899,142,000 francs, and the imports, 4,217,150,000 francs, coming under three general heads in the following proportion: Foodstuffs,

exports, 681,000,000 francs; imports, 1,020,000,000 francs; raw materials, exports, 1,084,000,000 francs; imports, 2,506,000,000 francs; manufactured goods, exports, 2,134,000,000 francs; imports, 691,000,000 francs. The different nations shared this trade in the following ratio: Great Britain imported into France 532,000,000 francs' worth of goods; the United States, 400,000,000 francs; Germany, 345,000,000 francs; Belgium, 311,000,000 francs; Argentina, 253,000,000 francs (hides and skins mostly); Spain, 238,000,000 francs; Russia, 162,000,000 francs; and Italy, 150,000,000 francs. Of the exports, Great Britain took goods to the value of 1,181,000,000 francs; Belgium, 555,000,000 francs; Germany, 428,000,000 francs; the United States, 236,000,000 francs; Switzerland, 204,000,000 francs; Italy, 173,000,000 francs; Spain, 136,000,000 francs; Brazil, 57,000,000 francs; and Argentina, 51,000,000 francs. In 1900 the foreign trade amounted to 4,408,530,000 francs imports and 4,078,032,000 francs exports. Of the imports, 828,921,000 francs represented the value of foodstuffs, 841,430,000 francs of manufactured articles, 2,738,179,000 francs of raw materials; of the exports, the foodstuffs were worth 776,378,000 francs; manufactures, 1,995,862,000 francs; and raw materials, 1,090,375,000 francs. The Exposition did not increase the volume of commerce, as was expected. In fact, exports showed quite a falling off; but it is probable that the full effects of the Exposition on trade will be felt in 1901, when the showing of goods is over and serious transactions begin. To the trade in 1900 the United States contributed \$64,948,000 toward the imports and \$74,674,842 toward the exports. In 1898 France imported 390,780,354 francs in coin and bullion, and exported 501,798,828 francs. In 1899 the figures for 11 months were 465,215,000 francs imports and 355,687,000 francs exports; in the first 11 months of 1900 they were 529,905,000 francs imports and 290,477,000 francs exports.

Shipping.—The merchant navy of France bears not the slightest proportion to the commerce of the nation. While England and Germany have been doubling and trebling their tonnage, France, in the matter of shipping, has stood still or has even slightly deteriorated; and though the coasting and colonial trade is well in the hands of French seamen, the foreign trade is almost entirely carried on in foreign bottoms. In 1870 the German merchant marine amounted to 980,000 tons, in 1899 it stood 2,720,000 tons; France's tonnage in 1870 was 1,072,000; in 1898 it was estimated at 1,242,091, in 1899 at 1,401,000, and in 1900 at 1,350,562 (Lloyd's). French economists deplore the prevalent policy of building up sailing fleets whose days are past, and of neglecting the construction of steam vessels. In 1898, of the 15,615 vessels under the French flag, 14,406 were sailing craft. From 1898 to 1899, while sailing tonnage doubled, the weight of steam afloat sank from 37,000 to 28,000 tons. This, of course, is greatly due to the lack of technical skill among Frenchmen in the matter of iron ship-building, to the fact that she is forced to import her machinery, and, above all, to the lack of coal, which compels France to buy 10,000,000 tons from England every year at the rate of \$10 a ton. In 1897 the port entries were 80,005 French vessels, of 11,512,233 tonnage, and 20,272 foreign vessels, of 10,986,798 tonnage; the clearances comprised 80,473 French vessels, of 11,857,131 tonnage, and 20,424 foreign vessels, of 10,950,417 tonnage.

In 1898 the entries stood 82,094 French vessels, of 11,907,268 tonnage, and 20,965 foreign ships, of 11,950,683 tonnage; the clearances were 82,585 French vessels, of 12,220,972 tonnage, and 21,191 ships, of 12,076,343 tonnage. During the first 10 months of 1900 navigation statistics tell the following story concerning the relation of French shipping and French commerce: In trade between France and her colonies and protectorates there were engaged 1950 ships, aggregating 1,548,349 tons; in deep-sea fishing, 635 vessels were engaged, with a tonnage of 63,809; 3947 French vessels, of 1,820,701 tonnage, carried on trade with European countries; and 512 ships, of 826,969 tons, sailed to non-European countries. Of foreign bottoms, 178, of 138,534 tons, traded between France and her colonies and protectorates; 15,845 ships, of 9,076,004 tonnage, plied between France and other European countries; and 1511 vessels, of 3,333,349 tonnage, sailed between France and non-European countries. Of the ships engaged, therefore, in the French carrying trade, a little over one-fourth were French; and of the total tonnage engaged, French tonnage was only one-third. The encouraging features of the quoted figures are those which show that France almost monopolizes the carrying trade with her colonies and dependencies; with the development of the colonies the merchant marine of France may also enter on a prosperous career.

Internal Communications.—The network of national highways laid out by Napoleon II. at immense expense, and continuously improved since his time, has put France above any other country in the matter of roads. In 1899 there were 30,775 miles of road, over 40 feet broad, connecting all the principal cities, and making France an ideal place for the tourist on bicycle or automobile. There are 5500 miles of navigable rivers and 2970 miles of canals. The railroads of France were built under concessions from the government, which subsidized them and even now guarantees the interest on their bonds. Ultimately, they are all to come into the posses-

sion of the state, which at present owns one of the six main lines. In 1899 there were 23,375 miles of road in the country, whose gross receipts were 1,425,100,000 francs, and whose profits amounted to 694,300,000 francs. The number of passengers carried was 410,000,000. The different trunk lines, their lengths, and their earnings from January 1 to December 16, 1900, are as follows:

	Miles.	Francs.
National Railway.....	1749	47,270,000
Paris-Lyons-Mediterranean	5607	439,090,000
Nord	2330	239,195,000
Ouest	3473	179,977,000
Orléans	4280	218,111,000
Est	3004	183,471,000
Midi	2149	105,763,000

In 1897 the rivers and canals carried 4,366,000,000 kilometric tons—that is, the actual number of tons, multiplied by the distance in kilometres; in 1898, 4,577,000,000 tons; in 1899, 4,489,000,000 tons. The railways in the same 3 years carried 13,791,000,000, 14,865,000,000, and 15,860,000,000 kilometric tons respectively. In 1898 France had 62,952 miles of telegraph and 23,402 miles of telephone.

Army.—The French army, third in size among those of European nations, rests on conscription. Every male citizen between the ages of 20 and 45 is liable to military duty. The terms of service are 3 years in the active army, 10 years in the reserve of the active army, 6 years in the territorial army, and 6 years in its reserve. In spite of the tremendous burden of expense it imposes on the people, and in spite of the odium which the Dreyfus affair recently cast on its administration, the army is dear to all Frenchmen, of whom the vast majority look upon the service required of them as a privilege and a sacred duty. The hope of obtaining revenge for Alsace-Lorraine and the inveterate hatred of Britain, that keep the French dreaming always of a short dash across the channel and an attack on London, have tended to strengthen this feeling. To keep up in the race with Russia and Germany, France strains to the utmost her physical and financial capacities. Russia's army of nearly 900,000 men is drawn from a population of 130,000,000; Germany's forces, 700,000 strong, rest on a foundation of 52,000,000 souls, while France has only 38,000,000 to support her armament of almost 600,000. Here she is confronted by the grave problem, mentioned in the paragraph on population. Already far behind her rivals in numbers, she cannot continue increasing her forces in just proportion with a stationary population, while Germany adds 500,000 to her population every year, and Russia 3,000,000. The position of France as a leading armed Power seems, therefore, greatly to be threatened. The army is divided into 20 *corps d'armée*, each a miniature of the entire organization in its equipment of the different arms of the service—infantry, cavalry, artillery, engineers, and train. The different *corps*, numbered from 1 to 20 in the order mentioned, have their headquarters at Lille, Amiens, Rouen, Mans, Orléans, Chalons-sur-Marne, Bézanson, Bourges, Tours, Rennes, Nantes, Limoges, Clermont-Ferrant, Lyons, Marseilles, Montpellier, Toulouse, Bordeaux, Algeria, Nancy. In addition there are the forces of the military government of Paris and the gendarmerie, ready to be called on in time of war. In 1899 the army was composed as follows: 163 regiments of infantry, 30 battalions of *chasseurs à pied*, 4 regiments of zouaves, 4 regiments of Algerian riflemen, 5 regiments of African light infantry, 5 regiments of various kinds. The cavalry forces comprised 13 regiments of cuirassiers, 31 regiments of dragoons, 21 regiments of chasseurs, 14 regiments of hussars, 6 regiments of African chasseurs, 4 regiments of spahis. There were 18 battalions of foot artillery and 40 regiments of horse artillery; there were 7 regiments of engineers and 20 squadrons of train; finally, 8 colonial battalions and 21 *corps* of departmental gendarmerie. The territorial army was composed of 145 regiments of infantry, 10 battalions of zouaves, 7 battalions of *chasseurs à pied*, 41 squadrons of cavalry, 21 battalions of engineers, 19 squadrons of train. In 1900 the estimated strength of the army was 28,998 officers and 561,521 men, or, including the gendarmerie and the Republican Guard, 29,740 officers and 586,735 men, of whom 11,314 officers and men went to the general staff, the military schools, and to unattached commands; 13,386 officers and 367,520 men to the infantry; 3941 officers and 72,180 men to the cavalry; 3992 officers and 77,486 men to the artillery; 501 officers and 12,925 men to the engineers; 412 officers and 11,347 men to the train; 659 officers and 22,247 men to the gendarmerie, and 83 officers and 2961 men to the Republican Guard. In 1899 the war budget amounted to 649,496,036 francs; in 1900 the figures were 663,369,671 francs.

Navy.—The navy of France is the second in the world, coming next to that of England, though far behind it. Her colonial aspirations have made a large navy imperative for France; and as early as 1891 the country entered upon an elaborate

programme of naval construction, which, however, it soon abandoned. The declaration of M. Lockroy, former minister of marine, that the French navy was merely a costly toy, and useless for lack of fortified ports and coaling stations, led to the adoption in 1900 of a new programme, of which the chief features are the building of heavy battle-ships, swift armored cruisers with a large radius of action, fleets of sea-going torpedo boats, and the fortification of various points in Algeria, Tunis, Senegal, and Indo-China; all this to be completed before 1907 at an outlay of 762,000,000 francs. When these plans are executed France's fleet will consist of 28 first-class battle-ships, 24 protected cruisers, 52 destroyers, 263 torpedo boats, and 38 submarine boats. The new battle-ships are to be of 14,865 tons, 18 knots, and have a radius of 4000 miles; the cruisers, 12,600 tons, 22 knots, and a radius of over 12,000 miles. The ports to be fortified are, among others, Bizerta, in Tunis; Dakar, in Senegal, and Saigon, in Farther India. And to bind fleet and stations closely together a system of submarine cables has been projected from Oran, in Algeria, by way of Teneriffe to St. Louis, in Senegal; from Hue, in Annam, to the neighborhood of Hong Kong; from Madagascar to Réunion; from the Gulf of Benin to French Congo. This is all in the future. The actual state of the French fleet, as organized in the marine districts of Cherbourg, Brest, Lorient, Rochefort, Toulon, Algeria, and Cochinchina is the following: Of armored battle-ships, there are 34, of which 15 are coast guards and 19 sea-going machines. Of these 19, 8 range from 11,268 to 12,200 tons, have a speed of 17 knots, and are provided with 4 large turret pieces, 2 12 and 2 11-inch guns, or 4 12-inch guns. One, the *Brennus*, is 211,215 tons, and carries 3 13-inch guns. In the course of construction are the *Suffern*, 12,728 tons; the *Jéna*, 12,052 tons, and the *Henri IV.*, of 8950 tons, all of 18 knots speed and armed with 4 turreted 12-inch guns and batteries of 7.5-inch quick-fire guns. The other 10 sea-going battle-ships have no protected guns and fall below 16 knots speeds. Of cruisers, there are 6 armored vessels, ranging from 5000 to 6000 tons, from 18 to 20 knots in speed, provided with 2 7.7-inch guns and batteries of 6.5-inch and 5.5-inch guns. In building there are the *Jeanne d'Arc*, of 11,270 tons; 2 armored cruisers, of 14,138 tons and 23 knots; 8 armored cruisers, of 8000 to 9000 tons and 21 knots, and 3, of 7500 tons. In 1900 there were to be started 2 cruisers, of 12,416 tons and 21 knots. Of 35 unprotected cruisers, 3 are of the first class, having a speed of 23 knots; 16 of the first, second, and third classes, with a speed of 18 to 20 knots, and 16 of the third class, running from 19 to 20 knots. Last come 20 torpedo-boat destroyers and 222 torpedo and submarine boats. The torpedo-boat fleet is a favorite with the French, who depend on it to protect their coasts, and see in it a possible means of effecting the long-delayed invasion of England.

Colonial Policy.—For the last two years France has been vigorously pursuing her policy of colonial expansion in Africa and in Asia. The oases of the Sahara south of Algiers and Morocco are being reduced, and the Berber tribes and Arabs brought to submission. Expeditions have crossed the great desert, effected the conquest of Wadai, and defeated hostile chiefs with the aid of other French contingents coming up the Niger and its branches from the coast. In Cambodia French aggression is rapidly transforming a pretended protectorate into an undeniable dependency. Public works are being undertaken everywhere at great expense, in Senegal, in Congo, on the Ivory Coast, and especially in Madagascar, where railroads have been commenced, and roads, schools, and official buildings projected. Yet all this activity argues only a vigorous optimism on the part of France, for of present achievement and profits there are little or none. Far from being self-supporting, the colonies hang a heavy load on the mother country. In the budget for 1901, the minister of colonies received 103,000,000 francs for the year's expense, and taking into consideration the land and naval forces required for their protection, the railroad guarantees and shipping subsidies, 200,000,000 francs may be given as a moderate estimate of the annual loss her colonies bring France. Nor does the commerce between the colonies and the mother country serve to counterbalance the large outlays. The total imports into the colonies for 1897 amounted to \$49,360,278; of this amount France and her colonies supplied \$23,301,268 worth, while foreign countries contributed the rest, without going to the slightest expense in protecting unremunerative possessions. The figures quoted are, of course, better than those of ten years ago, when France imported \$10,000,000 worth less than her rivals, and probably not as good as the figures for 1900, which are not available; but, taken all in all, they seem to indicate that it will be a long time before France can hope to derive substantial profits from her colonies. The reasons for such a conspicuous lack of success may be pointed out very briefly. First, there are hostile physical conditions to be encountered which would seem to make permanent colonization impossible for any men, most of all for Europeans. Of France's vast empire, immense tracts consist of sand sparsely dotted with springs and oases; large tracts lie on pest-ridden shores, like Congo, Dahomey, or the Ivory Coast. According to some recent statistics, the last-mentioned place has a population of 2,250,000 natives, and 150 Europeans among whom

there have been 269 cases of disease. Indo-China, indeed, possesses a passably salubrious climate, but even there natural conditions do not permit the transplantation of large masses of Europeans. Second, even though European immigrants might live comfortably in Indo-China, France has no immigrants to supply. With a stationary population, with a standing army that drafts off the manhood of the nation, leaving not enough to develop the resources of the mother country, extensive emigration is, of course, not to be expected, and in fact figures show that the average emigration out of France for the last ten years has probably been about 3000 or 4000. Third, and most important of all, is the inadequate system of colonial administration that France persists in. There is the same tendency toward centralization that has always characterized her colonial policy, the same tendency toward overloading a dependency with laws and functionaries, the same spirit of exploiting the colony for the benefit of the mother country. Though afflicted with an overabundance of administrators, Indo-China, Madagascar, and Algeria are ruled from Paris, and not from their own capitals. England's Colonial Office employs 74 men to administer the empire; the French Colonial Office requires 231 men to watch over an empire one-tenth the size of England's. Most of the African settlements are virtually refuges for office-holders, where men come to be invalidated and retired on a pension; Dahomey, for instance, where the welfare of 33 colonists, of whom 12 were French, was guarded by 553 officials. Inefficiency, delays, costliness necessarily follow such a method of governing colonies from a minister's cabinet. The Colonial Office pays for its supplies 60 per cent. above the market price. To raise some small contribution from the colonies, the mother country taxes their imports into France, and to prevent their competing with the mother country puts a prohibitive tariff on all colonial products that are also produced at home. Figures say that from 1885 to 1898 France spent 1,125,000,000 francs on her colonies, and took back about 70,000,000 francs, raised by crushing taxes. The ministerial estimate for 1901 and the recommendation of the commission on the budget were as follows:

	Estimate.	Commission's Report.
	Francs.	Francs.
Administration	3,009,700	3,182,950
Subsidies	12,184,500	8,621,500
Military	79,257,000	91,330,545
Penal	9,060,400	8,890,800
	<hr/>	<hr/>
	103,517,600	112,025,795
To be raised in colonies.....	702,400	10,947,881
	<hr/>	<hr/>
Total expense.....	102,815,200	101,077,914

For accounts of the various French colonies and dependencies in Africa, Asia, and America, see under ALGERIA; ANAM; CAMBODIA; COCHIN CHINA; FRENCH CONGO; DAHOMEY; GUADELOUPE; FRENCH GUIANA; FRENCH GUINEA; INDO-CHINA; IVORY COAST; LAOS; MADAGASCAR; MARTINIQUE; RÉUNION; SENEGAL; SOMALI COAST; FRENCH SOUDAN; TONQUIN; TUNIS.

HISTORY.

The Cabinet—The year in France has been a quiet one, free from violent political disturbance within, troubled by few complications abroad. Delivered from the incubus of the Dreyfus affair, the country has turned to its private business and its Exposition. The parliamentary history of 1900 is the history of a situation rather than of actions, for political parties have retained the form they assumed during the stress of revision, and legislation, with some exceptions to be mentioned, has concerned itself with ordinary measures and proposals. Waldeck-Rousseau and his conglomerate ministry came in, as the phrase ran, to save the country, whose only hope was the ending of the famous "affair" and the establishment of peace. Contrary to expectations, the premier succeeded in arriving at his object and remained in office, successfully meeting all attacks and gathering strength with time. This in great measure must be attributed to the personal qualities of the man. A splendid orator, expert debater, master of parliamentary tactics, he has escaped at moments when others might have met destruction. But the chief source of his power is the feeling, widespread through the nation, that the republic, endangered by the intestine quarrel of the last few years, is safe only in the hands of Waldeck-Rousseau and his associates. The ministry is not popular in France. The policy of the various ministers has been attacked in the Chamber, that of Waldeck-Rousseau and Mille- rand especially, and more than once the government has been left with a minority; but always when it has come to passing to the order of the day or voting confidence in the cabinet, the memory of the stormy days of 1899 has brought the deputies to



M. WALDECK-ROUSSEAU.



PRESIDENT LOUBET.

their better senses and insured victory to the government. The country has discovered what plots against the nation were carried on under the mask of nationalism, anti-Semitism, and militarism, and has turned to the Republicans for a moderate and safe administration. The Amnesty bill, passed in December, 1900, put an end, for a time, at least, to the agitation over the Dreyfus affair. It forbade the bringing of lawsuits arising from the affair, and pardoned all concerned with the exception of Déroulède, Guérin, and Marcel-Habert. In foreign matters, a spirit of conciliation has prevailed, arbitration has been resorted to for the settlement of disputed questions, treaties have been made arranging boundaries, and the policy of non-interference with the affairs of other nations has been carried out. That the country appreciates this policy of moderation appeared in November, 1900. The Opposition had been declaring that as soon as it had finished counting the profits of the Exposition it would overthrow the ministry. November 8 was a stormy day in the Chamber. Hostile motions began to pour in, and very soon the government was fighting for life. In a discussion of its general policy it was sustained by a vote of 330 to 238. But a motion deploring the collectivist tendency of the cabinet passed by 257 to 214, and a motion censuring the surrender by the authorities to the Belgian government of Sipido, the would-be assassin of the Prince of Wales, passed by 306 to 216. And when the ministry seemed lost, a vote of confidence was accorded it by 316 voices against 237. Similar scenes had occurred on May 22, when Méline and Ribot led an unsuccessful attack on the government; and on May 28, when the word "felony," used by Waldeck-Rousseau in characterizing the attempt of some officers to reopen the Dreyfus affair, caused the resignation soon after of General de Galliffet, minister of war; Jamont, generalissimo of the army, and Delanne, chief of the general staff. The premier, however, explained his meaning, and the deputies awarded him their confidence.

Political Parties.—The ministry depends for its support on the liberal Republicans and the Socialists. The latter, under the leadership of Jaures and Viviani, reorganized as a parliamentary group in December, 1899, when the preliminary Socialist congress had patched up a truce between the ministerialists and the followers of Jules Guesde. Jaures and his followers are opportunists who believe in furthering socialism by extorting continual reforms from the present bourgeoisie government. Under a reactionary ministry this would, of course, be impossible for them, and it is consequently to their interest that the republic be preserved and a ministry kept in power that is ready to grant large concessions in return for support in the Chamber. The Republicans do not love their Socialist allies, and mention has been made of the votes of censure passed on Millerand's collectivist attitude; but they agree with the Socialists in their opposition to the clergy, and above all things must have their support against the Nationalists and the conservative Republicans. There are not as many groups in the two houses now as formerly. The Monarchists and the Nationalists have sunk in importance, and can only attack the government by uniting with the main body of the opposition, the conservative Republicans under Méline. Nor is this body an irreconcilable enemy of the ministry. Notice has been taken of the fear of anarchy which, at critical moments, has sent men from the Left to the support of the government. On more than one occasion Méline has proposed and voted for confidence in the ministry. January 28, 1900, 99 senators, according to the constitution, were elected for a period of 9 years. Of these, 61 were Republicans, 6 Liberal-Republicans, 18 Radicals, 7 Socialists, 4 Monarchists, and 3 Nationalists. The composition of the Senate remained unchanged, but to the Nationalists, who had expected large gains, and put up 30 candidates, the election was a profound disappointment. Still worse for them was the result of the municipal elections in April and May. Though they carried Paris by a good majority, their downfall in the country districts was almost complete. Nationalist strongholds were lost to Republicans and Socialists, and candidates recommended by Déroulède were overwhelmingly defeated.

The Ministry and the Congregations.—One of the few important matters of legislation mooted by the ministry in 1900 was the so-called Law of Associations, which Waldeck-Rousseau had made his own particular care. In France there are no laws permitting the existence of associations or regulating their constitution. All corporations that exist do so only on sufferance, and it is within the power of the authorities to suppress them at will. To remedy this state of affairs was the ostensible purport of the legislation proposed; but though the word association was employed without any explanatory adjective, all agreed that it was the religious corporations, the Catholic congregations, that were aimed at. The government did not deny this, but asserted the necessity of curbing the power of the irregular clergy, whose immense wealth and control of education make them dangerous elements in the nation. The influence of the clergy, it was declared, has been constantly exerted in favor of monarchy and reaction, and the pupils of Catholic schools have been brought up to hate the republic. The Opposition maintained that the government was actuated by the

desire to plunder the congregations of their possessions, which, by the way, said they, have been immensely overestimated, and to destroy the freedom of instruction, which in France means the right of Catholic institutions to give instruction independent of state control. The action of the ministers was characterized as a bid for the continued support of the radical Socialists by sacrificing to them their traditional enemies, the clergy. In this accusation there was some truth, but, on the whole, the ministers may be said to have been sincerely desirous of strengthening the republic by completely secularizing education, and bringing the congregations under the closer control of the government. The battle began early in 1900. The Assumptionist monks of Paris, in their organ, *Le Croix*, virulently attacked the government as a whole and the ministers individually. On January 22, the superior and 11 monks of the order were brought to trial in Paris, charged with being members of an illegal association and conspiracy. January 24 they were fined and the order declared dissolved. On February 12 a bill was introduced into the Chamber providing for the punishment of ministers of religion who should criticise public authorities. For expressing their sympathy with the Assumptionists and denouncing the government, the Archbishop of Aix and three bishops were deprived of their stipend. Another bill was introduced into the Chamber, providing that all candidates for the civil service, the army, and the navy must have attended a college of the state for at least three years, but this the Commission on Instruction quashed by a vote of 14 to 9. In a speech delivered at Toulouse on October 28, shortly before the opening of the Parliament Waldeck-Rousseau declared that the law of associations would be the chief feature of the ministerial programme. He admitted that it was aimed against the religious communities, whose wealth he estimated at 1,069,000,000 francs, and was intended to prevent their further acquisition of property and to deprive them of the right to educate citizens who were to serve the state. Such a bill has been laid before Parliament; a similar one has been introduced by M. Henri Brisson, and at the time of writing the legislature is engaged in debating the question. The Pope has sought to mediate between the government and the clergy, has counselled moderation and appealed to the protection of the Concordat.

Millerand and Labor.—The presence of a Socialist in the cabinet has tended to make labor legislation an important part of the ministerial programme. Millerand's advent into the ministry of commerce and industry was followed by a thorough reorganization of the Superior Council of Labor. It was made a body of 66 members, chosen for the most part by election, women being eligible. Twenty-two members were to be voted for by laborers, 22 by employers, 12 were to be appointed by the minister, and the remaining 10 to be made up of the president of the municipal council, members of the Chamber of Commerce, and directors of the ministry. The council was to meet on the first Monday of June and to discuss all subjects pertaining to labor. Questions thus broached were left to a permanent commission of 22, composed equally of employers and employees, to be investigated and reported on. The significant feature of the arrangement was the fact that the labor and the employers' delegates were to be chosen by the trades unions and the employers' associations respectively. By a decree of September 17, 1900, Millerand ordered the establishment of departmental councils of labor, similar in character to the Superior Council, composed half of laborers, half of employers. The chief duties of these councils are (1) to give information concerning all matters of labor at the demand of working men, employers, or the government; (2) to assist the Superior Council in its investigations; (3) to establish for the different professions, and with the consent of employers and employees, a normal scale of wages and normal hours of labor; (4) investigate the causes of lack of employment; and (5) to watch over the execution of all labor laws and to report on them to the minister. Millerand's open intention is to force non-union working men into the unions, and non-associated employers into associations. For this reason the delegates to the Superior Council and the departmental councils are to be elected only by the trades unions and the employers' associations, the non-affiliated workers and masters having no representation. Opponents of the scheme have pointed out how unfair it is in many ways, above all in this: There are in France 420,000 union working men and 5,676,000 non-union laborers; through the councils of labor the 420,000 men lay down conditions to be followed by the five and a half millions. In the same way 151,000 associated patrons would formulate measures affecting 1,200,000 independent employers. Late in 1900 Millerand also proposed a system of compulsory arbitration intended to avoid as much as possible strikes and lock-outs in the future. All establishments employing more than 50 hands were to declare whether or not they pledged themselves to arbitration, enterprises patronized by the state being obliged to submit. A contract to arbitrate having thus been formed between employer and employees, all grievances were to be submitted in writing by representatives of the working men, and the patrons were to appoint representatives to arbitrate with them. If these disagreed or failed to render a decision within six days the employees were

to assemble and decide whether to strike or not. Once decided on, cessation of work was obligatory on all employees; but a new vote was to be taken every seven days, and if the strike was not renewed, work should be resumed. For intimidating a laborer while voting, or for interfering with the function of a delegate or arbitrator, penalties of fine and imprisonment are prescribed.

Foreign Policy—France, England, and the Boers.—The policy of moderation the ministry set itself has been especially conspicuous in the attitude of the government toward England on the Boer question. Undeniably, the sympathies of the French people have been with the dying republics, and hatred for England has often found popular expression. But the foreign minister, Delcassé, and, in fact, all the authorities have striven to preserve a perfectly neutral position, and have succeeded in doing so. The cheaper journals of Paris, the irreconcilable factions, and those royalists who would be glad to build a monarchy on the ruins of a defeated republic were clamorous for war against England; but the more important and influential newspapers have supported the government in the part it has played with respect to England. The recognition of the advantages of England's friendship and a prudent respect for England's might have become very potent among thinking Frenchmen. Speaking in the Senate on March 15 concerning the relations of France to the English and the Boers, Delcassé wisely and frankly said: "But after so many rough trials, and so many radical changes in the European balance of power, France can no longer maintain that her duty to the world, to which she has never been false, should make her forget her duty to herself. The nation has lost none of that splendid generosity it has so often displayed, but an unfailing instinct warns us that we must no longer rashly give ourselves up to it. We have sacrificed enough for the cause of international solidarity to be entitled to watch without envy the progress of another Power, whose efforts we are ready to sustain, and whose success we shall sincerely applaud." The rule of action thus outlined, the government showed itself ready to follow. On March 7, a crowd of students and longshoremen attacked the British consulate at Bordeaux, and did some trifling damage. The rioters were arrested and punished, and apologies for the occurrence were offered England. Later in the year, when the cheap press had begun to publish scurrilous accounts and vile portraits of the queen, a sharp protest from Chamberlain, July 30, brought forth an immediate promise from Waldeck-Rousseau that the offensive publications should be suppressed. On the other hand, the Boer delegates were received cordially by Delcassé and by the municipal council of Paris, and treated with all the consideration a neutral nation could offer. On December 22 President Kruger landed at Marseilles, and was welcomed with enthusiasm by the inhabitants; and the people seemed content to cheer the Boers without indulging in the usual execrations against their enemies. Kruger's journey from Marseilles to Paris was a triumphal march. At many cities and towns on the road crowds swarmed out to hail him, school children sang before him and strewed flowers in his way; women cried over him and kissed his hands. At Paris he was received by a great crowd and many politicians, but it was noticeable that only the leaders of the Opposition were present, the government being represented by a minor official. During his stay in the city there was little commotion around his hotel, though he was greeted warmly whenever he went out. On November 29 the Chamber passed a resolution greeting Kruger and expressing its sympathy at the same time with the English democracy. Kruger remained a few days in Paris, received a medal from the municipal council, another from the students of the university, and left quietly for the north. And so the ministry steered safely through the year, keeping England as a good friend, agreeing with her in January on a *modus vivendi* in the question of the Newfoundland fishing rights, and settling through arbitration some slight dispute that had arisen in Sierra Leone and on the Niger (December 12). General Mercier, speaking in the Senate on December 4, astounded his hearers by suddenly launching a plan for the invasion of England, speedy, effective, and cheap. As he was going into details, however, he was called to order by President Follière, and the incident closed as suddenly as it had opened.

France in China.—The part played by France in China, as one of the allied Powers, will be found under CHINESE EMPIRE. Here it is only necessary to point out how Delcassé's note of September 30 chiefly served to break the deadlock between the different representatives in China over a basis of negotiations with the empire. Drawn with the knowledge of Russia, Delcassé's proposals received the approval of all the nations except the United States, which objected to certain features in the document. Virtually, however, it came to be accepted by all the Powers. Its terms were: (1) That the Chinese government punish all persons the European representatives should designate as having been concerned in the disturbances; (2) that further importation of arms should be forbidden; (3) that indemnities should be granted to states, societies, and individuals; (4) that permanent legation guards should be established at Peking; (5) that the Taku forts should be dismantled; (6) that European forces hold two or three points on the road from

Tientsin to Peking. That Russia should have acceded to the terms before they were drafted would argue that the Franco-Russian *entente* is still alive. In January Delcassé is reported to have said that the alliance between the two nations was as strong as ever, and a *quasi* official letter in the *Matin* in the same month dwells on the firm ties existing between them. On November 4, 1900, at the unveiling of a monument to President Carnot, Nicholas II. telegraphed: "The unveiling of the statue of your illustrious predecessor recalls vividly to my memory the important services rendered to France by the late President Carnot, and his active co-operation in the great work of the close *rapprochement* in an essentially pacific purpose of our friendly and allied countries. In heartily associating ourselves with that ceremony. I beg you, Mr. President, to accept the assurance of my sentiments of sincere and unchanging friendship."

Boundary Treaty with Spain.—In a convention with France, Spain ceded her claim to a strip of territory extending across French Congo to the fifteenth degree of longitude, and limited herself to a small tract between the ocean, on the west, the ninth degree of longitude on the east, the Muni River on the south, and Cameroon on the north. Spain also gave up her claim to the *hinterland* between Cape Blanco and Cape Bojador, keeping the regions along the coast, and leaving to France the important districts of Adrar and Sebkhah, Ijil. For the settlement of the boundary dispute with Brazil, the commercial treaty with Haiti, and trouble with Santo Domingo, see BRAZIL; HAITI; SANTO DOMINGO.

FRANZ FERDINAND, ARCHDUKE, heir presumptive to the throne of Austria, previous to hismorganatic marriage with the Countess Sophia Chotek, renounced all claim to the throne on the part of his wife and children on June 28, 1900. This marriage took place July 1, and it was reported later in the year that the archduke was intending to relinquish his own right of succession in favor of his brother, Archduke Otto Franz, and the latter's son, Archduke Charles. He was born at Gratz in 1863, the son of the late Archduke Charles Louis, who died in 1896, and the Princess Maria Annonciata, daughter of Ferdinand II., King of the Two Sicilies. A few years ago he inherited the fortune of the Grand Duke of Modena, and took the name of Este, but when the Archduke Charles Louis, the father of Archduke Franz, renounced the rights of succession in his favor, Archduke Franz gave his fortune and the name of Este to his brother, the Archduke Otto. During 1893 Archduke Franz made a journey around the world.

FRATERNAL CONGRESS, NATIONAL, was organized in 1886 by the Ancient Order of United Workmen and 16 other fraternal benefit societies, for the purposes of mutual information, benefit, and protection. The latest congress, held in Boston in August, 1900, embraced 47 orders, with an aggregate membership of 2,668,649, carrying insurance to the amount of \$4,021,000,000, and having paid over \$38,00,000 in benefits during the year. The congress meets partly in sections, the two chief sections being the medical and that on the fraternal press.

FRATERNAL ORGANIZATIONS is a term which has come to be applied more particularly to the beneficiary secret societies, which pay death, sick, accident, funeral, or other benefits. In a general sense it may be considered to embrace all the various associations of a secret and fraternal nature. It is of interest to observe that but one country is more thoroughly characterized by its secret society system than is the republic of the United States, and that country is China. There is little resemblance to the revolutionary societies of the Orient, however, in the American secret fraternal organizations, more than half of which are beneficiary, and all of which teach the principles of benevolence and peace. The secrecy of American societies is, moreover, largely nominal, and is attended by none of the dangers which the name "secret society" has an unfortunate tendency to suggest. There are about 600 fraternal beneficiary societies in this country, with an aggregate membership of 5,500,000, nearly half of which is contained in the Freemasons and the Odd Fellows, with a membership of about 1,000,000 each, and the Knights of Pythias, with nearly 500,000 members, and as many more members in the 47 organizations which form the National Fraternal Congress (*q.v.*). The remaining membership is scattered among some 500 odd societies. According to the *Cyclopædia of Fraternities* (1899), over 30,000 men join the Masons annually, as many more the Odd Fellows, and half as many the Knights of Pythias. The number of novitiates in American secret societies reaches some 200,000 a year. The pioneer secret society in America is, of course, the Masonic, which was established in 1730 at Philadelphia. In 1765 the Sons of Liberty arose, which later led to the organization of the Tammany societies, the forerunner of various patriotic and political societies. Previous to the rise of the Tammany societies, however, the Society of the Cincinnati was formed, in 1783, and practically all succeeding ancestral military societies have been modelled upon it. In 1776 the formation of Phi Beta Kappa introduced a new element into the secret society system, though the development of the modern college fraternity did not begin until the organization of Kappa Alpha in 1825.

In 1819 the Odd Fellows appeared in this country, being, with the other English societies—the Druids and the Foresters—the forerunners of the American “friendly” beneficiary societies. The Improved Order of Red Men is the oldest friendly society of purely American origin. The Ancient Order of United Workmen, organized in 1868, is the original mutual assessment beneficiary secret society, being the first to carry a co-operative life insurance plan into practical effect. There are now between 150 and 200 such societies conducted on what is known as the lodge system. The Knights of Pythias combines the plans of both the friendly and the assessment beneficiary society. There are some 25 or more secret labor organizations, all of which have beneficiary features of some kind, as have various other secret societies devoted to total abstinence or other declared aims.

The National Fraternal Congress is a combination of some of the stronger orders to bring the better societies into line, to overcome the impression caused by the financial failures of those societies which have been characterized by lack of business methods and well-established principles, and to bring about some uniform legislation regulating fraternal organizations throughout the country. It has recommended such a law, which has been adopted by Congress for the District of Columbia and enacted by several State Legislatures. It is said that only about 15 States have fairly complete legislation relating to fraternal societies. One reason for this is, of course, the relative newness of the system. It is a matter of record that the Fraternal Congress has made steady progress toward sound financial operations. During 1900 the societies represented in the congress paid benefits estimated at \$38,000,000, and were carrying insurance risks of considerably more than \$4,000,000,000. In addition to these, it should be noted that there are many societies which maintain systems of benefit which are chiefly remedial, and which cannot be characterized as systems of insurance. Some of these are quite large, one alone paying \$3,000,000 annually in relief work. In 1898 eighteen orders organized an American Fraternal Congress, the chief difference between it and the National Fraternal Congress being the insistence of the American congress on a reserve fund. The aggregate annual income of the beneficiary societies of the country is some \$60,000,000, and the certificates carried by those societies offering insurance policies amount to about \$5,000,000,000. From the latter figures it will be seen how large a part of the total is carried by those societies forming the National Fraternal Congress. The following table gives statistics relating to some of the more important fraternal bodies:

NAME OF ORGANIZATION.	Date of Foundation.	Membership.	Benefits disbursed since organization.
American Legion of Honor.....	1878	11,161	\$41,316,848
Ben Hur, Tribe of.....	1894	41,934	680,085
Bnai Brith, Independent Order of.....	1843	30,000	39,000,000
Brith Abraham, Order of.....	1869	20,017	1,477,687
Catholic Benevolent Legion.....	1881	44,000	11,403,058
Catholic Knights of America.....	1877	23,186	10,185,799
Druids, United Ancient Order of.....	* 1839	16,782	† 4,538,701
Klks, Benevolent and Protective Order of.....	1868	75,000	850,000
Foresters, Ancient Order of.....	* 1836	912,669	‡ 111,250,000
Foresters of America.....	1864	164,156	12,000,000
Foresters, Independent Order of.....	1881	180,717	9,193,205
Free Sons of Israel, Independent Order of.....	1849	12,000	3,533,000
Good Fellows, Royal Society of.....	1882	9,478	4,304,880
Heptasophs, Improved Order of.....	1878	55,102	5,179,196
Hibernians in America, Ancient Order of.....	1830 (?)	140,000	.....
Home Circle.....	1879	5,707	2,405,891
Irish Catholic Benevolent Union.....	1869	14,095	2,073,836
Knights and Ladies of Honor.....	1877	52,283	17,000,000
Knights of Honor.....	1873	50,932	71,778,898
Knights of Malta, Ancient and Illustrious Order of.....	* 1889	26,000	.....
Knights of St. John and Malta.....	1883	4,017	419,516
Knights of the Golden Eagle.....	1873	64,782	6,288,316
Knights of the Maccabees.....	1881	227,936	9,600,000
Ladies' Catholic Benevolent Union.....	1890	59,394	1,440,459
Mystic Circle, The Fraternal.....	1884	13,808	1,742,222
National Provident Union.....	1883	3,200	1,804,634
National Union.....	1881	58,152	12,836,469
New England Order of Protection.....	1887	30,222	2,789,650
Pilgrim Fathers, United Order of.....	1879	22,529	4,123,391
Rechabites, Independent Order of.....	1835	250,000	.....
Red Men, Improved Order of.....	1834	236,702	16,650,017
Royal Templars of Temperance.....	1870	18,718	7,599,000
Scottish Clans, Order of.....	1878	6,061	700,000
United American Mechanics, Order of.....	1845	\$ 49,189	.....
United American Mechanics, Junior Order of.....	1863	180,000	4,143,847
United Workmen, Ancient Order of.....	1866	415,000	106,245,168
Woodmen of America, Modern.....	1883	568,161	19,377,249
Woodmen of the World.....	1881	129,837	‡ 5,970,365

* In America. † Since 1849. ‡ Since 1836. § Dec. 31, 1899. | Including refund to members.

FREE BAPTIST YOUNG PEOPLE, UNITED SOCIETY OF, organized in 1888, had in 1900 a membership, including junior and intermediate societies, of 25,000; supports seven missionaries in India, besides contributing to several home missions. General meeting for 1901 at Harper's Ferry, W. Va., September 5. President, E. P. Metcalf, Providence, R. I.; secretary, Harry S. Myers, Hillsdale, Mich.

FREEMASONS, reported for 1899-1900 as follows, in the United States and British America: Whole number of members, 857,577; raised, 46,175; admissions and restorations, 21,325; withdrawals, 16,603; expulsions and suspensions, 597; suspensions for non-payment of dues, 16,844; deaths, 13,507. Gain in membership over preceding year, 21,028.

FREE METHODIST CHURCH. See **METHODIST CHURCH, FREE.**

FRENCH, ELIZABETH J., M.D., died in Boston, Mass., January 11, 1900. She was born in 1821 at Mechanicsburg, Penn. Having studied medicine, she practised in New York and Philadelphia and, during the last six years of her life, in Boston. In her special line of work—electro-cranial diagnosis and the general medical and therapeutic uses of electricity—she attained a wide reputation.

FRENCH, Major-General JOHN DENTON PINKSTONE, commander of the British cavalry in South Africa, was born at Ripple, in Kent, September 28, 1852, and entered the Eighth Hussars in 1874. He served in the Soudan campaign of 1884-85, commanded the Nineteenth Hussars from 1889 to 1893, and from 1893 to 1897 served on the staff. He became brigadier-general of cavalry in 1897, and major-general in 1899. On the outbreak of war he was sent to Natal as commander of the cavalry, won the battle of Elandslaagte, and fought at Rietfontein and Lombard's Kop. Transferred to Cape Colony, he fought around Colesburg till Lord Roberts sent him to the Modder River, preparatory to the invasion of the Orange Free State. In the subsequent operations down to the flight of Kruger General French and his cavalry did splendid work, and were chiefly employed in Lord Roberts's swift marches and irresistible flank movements, for the details of which see **TRANSVAAL**.

FRENCH CONGO, a colony of France in West Africa, bounded by the Atlantic Ocean and German Cameroon on the west and the Congo River and its tributary Ubangi on the east, communicating with the French Soudan at Lake Tchad and at Wadai. It has an estimated area of 425,000 square miles, and a population variously estimated at from 6,000,000 to 12,000,000. While one of the largest possessions of France in Africa, French Congo is still very little developed, and few statistics of its resources are available. The most important products of export are rubber and ivory. The commerce is very insignificant, the imports and exports for 1898 amounting to 4,844,234 francs and 5,695,304 francs respectively. The number of vessels entered at the ports of the colony during the same year was 130, with a total tonnage of 110,773. The minerals of the colony include gold, copper, and iron, while the most important agricultural products are coffee, cacao, kola nuts, and piassava. The capital of the colony is Libreville, on the northern shore of Bagoon, with a population of about 3000. There were 57 schools, with 2654 pupils in 1898. The schools are all under the control of missionaries, most of them belonging to the Roman Catholic Church. The expenditure of France on the colony as given in the budget for 1900 amounted to 2,356,964 francs. The revenue for 1898, including the subvention from the French government, was 5,426,691 francs. The colony is administered by a commissioner-general, assisted by two lieutenant-governors, one in the Congo proper and the other in the upper Ubangi region.

FRENCH GUIANA, a colony of France, lying east of Dutch Guiana, on the northeast coast of South America, has an estimated area of 46,850 square miles, and an estimated population of about 30,000. The latter figure does not include a few tribes of Indians living in the mountains and numbering, perhaps, 1500, and some 1800 political exiles and 3900 convicts. About 150,000 square miles of territory lying to the south of the recognized limits of French Guiana have been claimed by both France and Brazil. The question was submitted to arbitration, and a decision was rendered on December 1, 1900, giving Brazil about 147,000 square miles and France about 3000 square miles. (See **BRAZIL**, paragraph **The Guiana Boundary**.) **Cayenne**, situated on the island of the same name, lying off the coast, is the capital and only port of the colony, and has a population of about 12,350. The colony is administered by a governor, who is assisted by a council of 16 members, and it is represented at Paris by 1 deputy. The principal crops consist of rice, corn, cacao, manioc, coffee, sugar, tobacco, and indigo; but agriculture is of small importance, there being only about 8000 acres under cultivation. The most important industry is gold mining; silver, iron, and phosphates are also exploited. The gold exports, which for the most part go to France, have been as follows: 1896, 101,938 ounces; 1897, 74,646 ounces; 1898, 48,600 ounces; 1899, 81,715 ounces. In addition to gold the colony exports rum, cacao, and phosphates. The principal imports are provisions, beverages, and textiles. The trade, which is small, is chiefly with France. In 1897 the

exports to France were valued at 1,648,847 francs, and the imports from France 10,849,482 francs; the reported value of the exports to France in 1899 was 300,000 francs, and of the imports from France, 10,400,000 francs. The local revenue and expenditure for 1899 balanced at 3,027,750 francs, and the expenditure of France in the budget of 1900 was 6,899,061 francs, of which 5,450,550 francs were for the penal settlement. This was established by the French government in 1885 for certain habitual criminals receiving sentences of more than eight years at hard labor.

FRENCH GUINEA, a colony of France on the western coast of Africa, between Portuguese Guinea and the British colony of Sierra Leone, has an estimated area of 48,000 square miles and an estimated population of 1,000,000. The colony includes the rich protectorate of Futa Jallon. For administrative purposes a part of French Soudan was united with the colony in October, 1899. French Guinea, like the other French colonies of West Africa, is administered by the governor-general resident at St. Louis, in Senegal. The colony is very nearly self-supporting; the local revenue and expenditure for 1899 balanced at 1,571,000 francs, while the subvention made by France in the budget of 1900 amounted to 224,625 francs. The principal products are rubber, palm oil, gum, rice, millet, and earth-nuts. In 1898 the exports were valued at 7,799,975 francs, in which amount France was represented by only 420,725 francs; the imports amounted to 9,019,875 francs, of which France was credited with 1,453,400 francs. The coast town Konakry is becoming an important trading centre. Plans have been made for the construction there of a wharf for the use of large vessels, and a railway from Konakry to the Niger is under construction. An evidence of the French policy of making the colony commercially independent of Sierra Leone was seen early in 1900 in the imposition of an import tariff on American and European goods entering by way of Sierra Leone and on certain African products. Merchants have, accordingly, been encouraged to establish permanent places of business in Konakry; and this, together with the rubber trade and the prospect of the railroad inland to the Niger, seems to indicate future commercial prosperity for the colony.

FRENCH LITERATURE. *History.*—During the past year France has been unusually prolific in historic works of the first order, and naturally a large number deal with the century which has just closed. Among general works, the place of honor properly belongs to the exhaustive *Histoire de la France, depuis les Origines jusqu'à la Révolution*, edited by the eminent Academician, Ernest Lavisse. It is being issued at regular intervals, and will comprise altogether sixty-four parts, the first of which appeared in November. It covers the period from prehistoric times to Caesar's decisive conquests in Gaul, and commends itself for its thorough and at the same time lucid treatment. Professor Lavisse, who holds the chair of modern history at the University of Paris, is best known for his historical studies of Germany, yet he has already collaborated, with M. Rambaud, on a general history of France. In the present undertaking he has the collaboration of MM. Bayet, Bloch, Carré, Langlois, Lemonnier, and many other specialists. Single volumes of three other important works have appeared this year: the opening instalment of a searching *Histoire Politique de la Révolution Française*, by Professor Alphonse Aulard, also of the University of Paris, who is probably the greatest living authority upon that period; the third volume of Léon Say's *Les Finances de la France sous la Troisième République*; and the fifth volume of Émile Ollivier's *Histoire de l'Empire Libéral*, issued under the title *Le Roi Guillaume*, and containing an attempted justification of the author's own political course during the closing years of that period. In this conjunction should be mentioned the critical and reflective study, by H. Berton, of *L'Évolution Constitutionnelle du Second Empire*. Pierre de la Gorce's *Histoire du Second Empire*, the fourth volume of which appeared in 1899, has since received the award of one of the two annual Gobert prizes for the best work on French history, the other being given to Rudolphe Reuss, for his *L'Alsace au Dix-septième Siècle*. A kindred monograph, *L'Alsace en 1814*, is due to Arthur Chuquet, hitherto best known for his two volumes upon *La Jeunesse de Napoléon*. The condition of Alsace at the beginning of the final struggle; the successive defeats; the steady encroachment of the allied armies; the final terms of peace—all this is told with that precision of detail and limpid ease of style for which M. Chuquet's works have been often praised. Another volume to be commended for its clearness and impartiality is Georges Weill's *Histoire du Parti Républicain en France*, covering the period from 1814 to 1870, from Waterloo to Sedan. *L'Armée de l'Ancien Régime* is the title of an important monograph by Léon Mention, who is probably one of the best-informed historians of the French army now living, and who has here followed up every branch of the service, and made an exhaustive use of the best original sources. The navy also comes in this year for a considerable share of attention. Charles de la Rozière, the first part of whose *Histoire de la Marine Française* appeared in 1898, has just completed the second volume, *La Guerre de 100 Ans*—

Révolution Maritime, which covers the period from the last third of the fourteenth century to the closing years of the fifteenth, and shows no small amount of erudition. Another kindred author is M. E. Chevalier, who gives us a history of the French navy from 1815 to 1870; while two young naval officers, Maurice Loir and Gaston de Caqueray, who seem to have drawn their inspiration from Captain Mahan, have recently written a volume entitled *La Marine et le Progrès*. A special phase of French naval history, the defence of Dunkerque, in the seventeenth century, is the subject of two interesting monographs, *La Flandre Maritime et Dunkerque sous La Domination Française*, by A. de Saint-Leger; and *Défense des Côtes de Dunkerque*, by Georges Toudouze, who draws some practical lessons from past experience. Turning from the political and military to the social side of history, we find several volumes that deserve to be emphasized. *La Société Française du XVIe. au XXeme Siècle* is the title of a long series in which M. Victor du Bled proposes to cover the history of French society; and the essays which make up the first volume are not only thoroughly authoritative in character, but are written in a light and brilliant vein which makes delightful reading. Sharply contrasted in subject is Professor Émile Levasseur's *Histoire des Classes Ouvrières et de l'Industrie en France avant 1789*, with which the author first made his reputation forty years ago, and which has just been reissued in a new and amplified edition. M. Raoul Chélaré is the author of a rather curious volume, *La Civilisation Française dans le Développement de l'Allemagne*, in which he seeks to show that Germany owes to her rival a good deal more than is generally recognized, and instances especially her indebtedness for certain features of monastic orders, Gothic architecture, etc. *La Légion d'Honneur, 1802-1900*, by L. Bonneville de Marsangy, is a sumptuous volume, published under the patronage of the Grand Chancellor of the order, of which it gives in detail the entire history. The illustrations include many valuable portraits and documents. The survey of the year's historical work would not be complete without at least a passing mention of a few volumes dealing with other countries than France. First in the list are several histories of Belgium; the initial volume of Professor Vanderkindere's *Formation Territoriale des Principautés Belges*, which deals with the Middle Ages; *L'Histoire de Belgique*, by Henri Pirenne, which has been one of the successful books of the year in Belgium, in spite of the fact that the first volume brings the story down only to the fourteenth century; and an account of the reign of William I. of Belgium, written frankly from the Catholic point of view by the Jesuit father, L. Delplace. Finally, there is a convenient history of Roumania, from 1822 to the present day, by Frédéric Damé, who is known as the author of an excellent Roumanian dictionary and *L'Indépendance Grecque et l'Europe*, by Gaston Isambert, who may enjoy the distinction of having written the first adequate history of Greek independence which has appeared in French.

Biography, Memoirs, etc.—One of the most curious features of recent historical publications in France is the lasting vogue of memoirs. Anything in the form of personal reminiscences, although it may add little to our knowledge, seems to be welcomed if only it presents well-known figures in a slightly new light. The memoirs of the First Empire seem inexhaustible. Among the more important additions to Napoleonic literature, we have besides the third volume of Frédéric Masson's *Napoléon et sa Famille; Bonaparte en Italie (1796)*, by F. Bouvier; *Souvenirs Inédits sur Napoléon*, from the journal of a certain Senator Senator Gross, who, it seems, was a member of the municipal council of Leipzig, and as such was sent upon several official missions to the emperor, the King of Prussia, and other rulers, and has recorded the interviews in a clear and happy fashion; and *L'Éducation Militaire de Napoléon*, a masterly study, founded upon authentic documents, by an artillery officer, M. J. Colin. Napoleon's military education, the author holds, was due, not to the modest professors of Brienne, but to the great and well-nigh forgotten tacticians of the eighteenth century. There is also a biography of one of Napoleon's sisters—the one who was thought to resemble him most closely in looks and in character—*Elisa Napoléon (Baciocchi) en Italie*, by E. Rodocanachi. *Les Maréchaux de Napoléon* is the title of a volume by Gérard de Beauregard, containing a series of dramatic monographs of Murat, Jourdan, Massena, Augereau, Bernadotte, Soult, Ney, and others. Among the memoirs which throw interesting light upon this period are those of General d'Andigné, which contains much curious information regarding the emigration and the "Chouans," as well as reminiscences of Napoleon, Sieyès, and other leading figures of the time. *En Emigration—Souvenirs tirés des Papiers du Comte A. de la Ferronnays* is a volume of kindred interest. M. de la Ferronnays had always refused to write his memoirs, but his wife had carefully preserved every one of the numerous letters that he wrote her during his frequent absences on diplomatic missions, and she also wrote her own memories, *Souvenirs d'une pauvre Vieille*, intended only for the eyes of her children; and it is these documents which have served M. de Beauregard as a basis for the present volume.

Another interesting figure of revolutionary times was the Comte de Castellane, father of the Maréchal; and his life has been made the subject of an enjoyable volume by his granddaughter, the Comtesse de Beaulaincourt. It is impossible to do more than rapidly enumerate a few of the remaining memoirs. They include the memoirs of the Duc de Rovigo, the minister of police, whose unpleasant duty it was to send Mme. de Staël into exile; memoirs of the Baron de Bonnefoux (1782-1855), edited by E. Jobbe-Duval; *Mémoires Anecdotique du Général Marquis de Bonneval*; and a volume of unpublished letters exchanged between the Duc de Bourgogne and the Duc de Beauvillier, edited by the Marquis de Vogüé. To many readers, however, none of these volumes will equal in interest the biography which Albert Néton has written of the Abbé Sieyès, whose share in events of that troubled period led Michelet to say that "he both opened and closed the French Revolution." A few biographies of women of the revolution deserve mention. M. Léopold Lacour has treated of several in a volume which he calls *Les Origines du Féminisme Contemporain*, including, among others, Olympe de Gouges and Rose Lacombe. In *La Mère du Duc d'Enghien*, M. le Comte Ducos has given a painstaking study of the little-known personality of the Duchesse de Bourbon, based upon an exhaustive examination of the archives of the Palais Soubise, and other unpublished documents. *La Duchesse de Berry*, by H. Thirria, is another searching study of an interesting personality, based upon hitherto unused sources, principally the letters which the Duchess wrote to her lifelong friend, the Comtesse de Meffray. It is a volume which should clear up many doubtful questions and aid in judging the mother of the late Comte de Chambord with more fairness and truth.

Two important biographies of men who, each in his own way, left a lasting imprint on the closing years of the nineteenth century, are M. Valléry-Radot's life of Pasteur, and M. de Coulanges's life of Father Didon. One would scarcely look to a Frenchwoman for a study of John Henry Newman, yet such a study has been written. The writer is the daughter of the late president, Félix Faure, and the volume proves to be of no small interest. Other biographies of Englishmen include: *Joseph Chamberlain*, by A. Wiellatte; *Daniel O'Connell, sa Vie et Son Œuvre*, by L. Nemours-Godrée; and *David Hume, Moraliste et Sociologue*, by G. Lechartier.

Literary History, Criticism, etc.—The dividing line between biography and literary criticism is often hard to draw, and a case in point is that of Emile Boutroux's *Pascal*, the latest volume in that admirable series of *Les Grands Écrivains Français*. Professor Boutroux, who occupies the chair of modern philosophy at the University of Paris, is one of the few men to-day who could do justice to such a subject; and he has approached his task with an earnestness and a zeal that have made his volume a notable one in a notable series. M. Renouvier, whose former volume, *Victor Hugo, Le Poète*, is well known, has now completed the second part, *Le Philosophe*; and at least one French critic has declared that the two volumes taken together form the most thoughtful work yet written upon the author of *Les Misérables*, either in France or elsewhere. Still another side of Hugo is given in the volume of love-letters, exchanged between the poet and his betrothed, and now published by Paul Meurice, under the title *Lettres à la Fiancée. Cinquante Ans d'Amitié*, by Mme. Edgar Quinet, contains another interesting chapter of literary history. Sooner or later the whole correspondence that passed between Quinet and Michelet during their life-long friendship will be given to the public. Meanwhile Mme. Quinet anticipates them with this enjoyable volume of her reminiscences. Every year swells the ranks of devout Stendhalians. The latest is Pierre Brun, who profited by a brief stay in Grenoble to study the works and the character of the author of *La Chartreuse*, to glean a few new facts about his life, and to write a brief study, *Henry Beyle-Stendhal*, which has at least the value of being from a new and unprejudiced point of view.

Among volumes of literary essays, we have from Brunetière this year only a volume of *Discours Académiques*, including his own "Discours de Réception," and his answers to new members. Emile Faguet, who this year succeeded to the chair left vacant by Cherbuliez in the Academy, and is in many respects Brunetière's faithful disciple, has found time to publish a third series of *Politiques et Moralistes du Dix-neuvième Siècle*, besides a comprehensive history of French literature, in two volumes, extensively illustrated from rare prints and manuscripts. René Doumic's new volume of *Études sur la Littérature Française* contains, among others, thoughtful appreciations of Balzac, George Sand, and Tolstoy. That exceptionally liberal and cosmopolitan critic, Théodore de Wizeva, who, nevertheless, preaches against cosmopolitanism in literature, has gathered together, under the title *Le Roman Contemporain à l'Étranger*, a series of studies upon English, Russian, Spanish, Italian, and Dutch writers, including thoughtful estimates of Kipling, Hall Caine, Stevenson, Mrs. Humphry Ward, Tolstoy, and Dostoievsky. Kipling is also the subject of an essay in another collection, *Les Romanciers Anglais Contemporains*, by Mlle. Yetta Blaze de Bury, who studies, among others, Du Maurier, Sarah Grand, Meredith,

Grant Allen, and Benson, but has little praise to bestow upon any save Thomas Hardy, and one or two volumes by George Moore. Still another volume on a foreign literature is *Franz Grillparzer, le Théâtre en Autriche*, by Auguste Ehrhard, who is remembered as the first to introduce Ibsen to the French reading public. In the present volume Ehrhard has given a remarkable study not only of Grillparzer, but of the entire history of the Austrian stage during the first half of the nineteenth century. A literary event of much more interest to the average Frenchman is the publication of the late Francisque Sarcey's dramatic feuilletons, or such of them as seem worthy of preservation, the whole to form seven volumes, grouped in the chronological order of the plays criticised. The task of selection devolved upon Gustave Larroumet, his successor as dramatic critic of the *Temps*, and Adolphe Brisson, Sarcey's son-in-law. In this connection two recent dramatic publications may be here mentioned. The first is the *Théâtre de Meilhac et Halévy*, the third volume of which is now ready. The other is the completion, by Hachette et Cie., of their great edition of Molière, by the issue of Vols. XII. and XIII., containing a lexicon of all the French words and phrases used by the dramatist. The authors are two brothers, Arthur and Paul Desfeuilles.

A few miscellaneous works remain to be mentioned. M. H. Avenel has written a voluminous and painstaking history of the French press from 1789 to the present day. Léon Levraut, who is a follower of Brunetière, has written a conscientious study of *Le Roman*, in which he traces the genealogy of the modern schools of fiction according to the methods laid down in Brunetière's *Evolution des Gendres*. A critic of a very different stamp, Rémy de Gourmont, whose *Livre des Masques* contains so many clever appreciations of the younger French symbolists, has just issued *La Culture des Idées*, which supplements his last year's volume, *L'Esthétique de la Langue Française*. A series of monographs on foreign literatures, similar to the World Literatures Series, edited by Mr. Gosse, has been projected by Armand, Colin et Cie., and arrangements have been made with the English publishers to translate into French certain volumes of the English series, such as Fitzmaurice-Kelly's *Spanish Literature*. Other volumes are being prepared by French authors, among them one upon Italian literature, by Hauvette.

Poetry.—While the past year has produced no poems which deserve to be characterized as works of genius, there are quite a number of volumes which rise distinctly above the prevailing mediocrity. Henri de Régnier is a true poet as well as an advocate of a freer and more supple prosody; and in his latest volume, *Les Médailles d'Argile*, he has shown that he too can write verse of irreproachable regularity, yet characterized with his customary exuberance of color and of imagery. Of equal charm, yet sharply contrasted in character, are the simple verses of Fernand Gregh, *La Beauté de Vivre*, which seems to fulfil the promise of his earlier volume, *La Maison de l'Enfant*. M. Gregh goes directly to life for his inspiration, and preaches a healthy optimism. There is a great deal of true poetry also in *Le Bois Dormant*, by Charles le Goffic, a collection of songs and rondeaus which seemed to be fairly permeated with the atmosphere of his native Brittany. Another delicate poet of nature is Arsene Vermenouze, already known for a volume of poems in the dialect of Auvergne; one feels that his new volume, *En plein Vent*, is aptly named; for he has plainly drawn his inspiration from the woods and fields, and the open-air life of nature. Mention should be made of a new volume by Stuart-Merrill, *Les Quatre Saisons*; *L'Allée des Saules*, by Jean-Marie Mestrallet, a variety of dainty verse which satisfies both eye and ear; *Pour Elle*, by Amadée Rouques, graceful verse, the burden of which is love and sadness; and a volume of love-poems by Philippe Burqui, having for its title the proverbial woman's reason, *Puisque!* Love also is the theme of one of the older poets, Armand Silvestre, whose *Fleurs d'Hiver* contains, among other poems, a sort of novel in verse, "Le Livre de Magda." There are few who possess a keener love of poetry or a more thorough mastery of harmonious rhythm than Catulle Mendès, who has this year given us *Les Braises du Cendrier*. In conclusion, it may be mentioned that the fifth and final volume of Paul Verlaine's collected works was issued last autumn, and that arrangements have been made for the publication of a complete collection of the poems of Stéphane Mallarmé, which will contain much hitherto unpublished verse.

Fiction.—Although the novel continues to retain its ascendancy in French literature, yet at present there is no dominant school—a condition which is hardly to be regretted, since it leaves each writer free to follow his natural bent. In some ways the year has been a rather notable one in fiction, for it has given us new volumes by Bourget, Prévost, Rod, and Barrés, besides posthumous works by Alphonse Daudet and Maupassant. Bourget's last two volumes are collections of short stories, *Drames de Famille* and *Un Homme d'Affaires*—brief, intimate dramas, rapidly sketched, and with his customary power. He has, however, completed a long novel, *Le Fantôme*, which is to run serially in the *Revue des Deux Mondes*. M. Rod's latest novel, *Au Milieu du Chemin*, deals with the serious question of an author's

responsibility for the influence exerted by his writings, his hero being a novelist who is forced to face the problem when he learns that a young girl's suicide is directly traceable to one of his romances. *L'Appel au Soldat*, the second volume of the trilogy begun so successfully by *Les Déracinés*, was finished more than a year ago by M. Barrés, but the publication was delayed owing to the agitation due to the Dreyfus trial. It is best described as a sort of idealized history of the Boulangist movement, in which the author himself had no small share. In *Léa*, the second volume of *Les Vierge Fortes*, Marcel Prévost completes the study of the "question féministe," begun in *Frédérique*; in his latest story, *L'Heureux Ménage*, he reverts to his earlier manner, that of *Le Jardin Secret*, and shows how ultimate peace may reign in a family even after repeated infidelities. *Premier Voyage*, *Premier Mensonge*, by Alphonse Daudet, proves to have been better worth publishing than is apt to be the case with posthumous volumes. It is autobiographic in character, and chronicles a youthful escapade of the author and a cousin of his, who afterward died during the siege of Paris. *Le Colporteur* and *Les Dimanches d'un Bourgeois de Paris* are two collections of unpublished fragments by Maupassant, in which the large amount of dross may be forgiven for the sake of the few pages which really merited preservation. A considerable number of novels deserve to be briefly emphasized. *Le Fils à Papa*, by Hugues Le Roux, is a minute study of the social conditions which, beginning even before birth, tend to develop in so many French families the type of the prodigal son. Émile Pouillon is the author of a story of some strength, *Le Voeu d'être Chaste*, in which the difficulties and temptations which assail a young seminarist finally force him to seek refuge in the monastery of La Trappe. *Sous la Tyrannie*, by Augustin Filon, tells the story of an honest, open-hearted man who, entering the world of politics, finds himself successively deceived by all whom he has loved and admired. Jean Berthérey's *Herille* is the simple tragedy of a man of humble birth, whose life is spoiled by constantly seeking for love of a kind and a degree that fate denies him. Henri de Régnier is the author of a novel, *La Double Maîtresse*, which has received much adverse criticism, but is, nevertheless, a very curious and original story, told with unusual charm. Georges Ohnet scores a new success along his usual lines in *Gens de la Nôce*. *Les Deux Étreintes*, by Léon Daudet, as the title implies, is a story dealing with passion under high pressure, and describes the struggle of a young woman caught in the vortex of two separate love affairs. *Les Dupont-Leterrier*, by André Beaunier, was a much-discussed novel, the central theme of which is the estrangement that took place in families as a result of taking sides in l'Affaire Dreyfus. Among novels of the year may also be mentioned: *Malentendus*, by Mme. Thérèse Bentzon; *Frida*, by André Theuriet; *Mensonge Blanc*, by Léon de Tinseau; *Fiancée d'Avril*, by Guy Chantepleure; *A Table*, characteristic dialogues by Jean Marni; *Une Nouvelle Douleur*, by Jules Bois; *Des Histoires*, by Michel Corday; *La Camorra*, by Hugues Rebell; *Du Triste au Gai*, by Jacques Normand, who has something of the grimness of Maupassant; *Les Histoires Risquées des Dames de Moncontour*, by François de Nion, an amusing and rather audacious volume of *contes drolatiques*; and *Le Journal d'une Fille de Chambre*, by Octave Mirbeau, which even surpasses the limits of audacity set by that author's previous volumes. Finally it should be noted that Anatole France is to follow *L'Anneau d'Améthyste*, with still a fourth volume of *Histoire Contemporaine*, to be entitled *M. Bergeret à Paris*, most of the chapters of which have already appeared in the columns of the *Figaro* and the *Echo de Paris*.

Travel, Foreign Countries.—As was to be expected, the recent crisis in China called forth in France, as it has done elsewhere, a multitude of books dealing with that region, and of very unequal merit. A work of some authority is Marcel Monnier's *Tour d'Asie*, of which the first volume appeared in 1899, and narrated the author's experiences in Cochinchina, Annam, and Tonquin; while the second volume, *L'Empire du Milieu*, deals with China proper. M. Monnier, who has lived many years in the far east, also contributes his word regarding recent events at Peking in a volume called *Le Drame Chinois, Juillet-Août, 1900*. First-hand impressions of Chinese life are also furnished by Dr. J. J. Matignon, who was for nearly four years physician at the French Legation in Peking. In his volume, *Superstition, Crime et Misère en Chine*, he paints a grim and sombre picture of the Middle Kingdom, which is further vouched for by M. Monnier, who contributes the preface. French Indo-China is quite naturally the main theme of several of the volumes. In *Tonkin en 1900* M. R. Dubois gives one of the most serious volumes that have been written since France took possession of that country. The principal financial reforms in Indo-China during the years 1897-99 afford Gustave Demorgny a theme for a careful and well-documented volume; while *La Question d'Extrême-Orient*, by A. de Pouvoirville, is a well-informed and interesting discussion of the rôle which French Indo-China is destined to play in the settlement of the Eastern question. Other works deserving mention are *L'Empire de Chine*, by M. Cl. Madrolle; and

A travers l'Indo-Chine, by Lagrilliere-Beauclerc. Other interesting volumes of Asiatic travel include an account of *Java et ses Habitants*, by M. J. Chailley-Bert; *Le Japon*, an interesting study written by a native Japanese, I. Hitomi, in perfectly pure French, and containing much curious information concerning the politics, religion, literature, art, and social customs of his country; and *Un Sejour dans l'île de Ceylon*, by M. Jules Leclercq. Dr. Feuvrier, who enjoyed the uncommon distinction of residing for three years at the court of Persia as physician to the shah, has recorded in *Trois Ans à la Cour de Perse* the many things which he saw and which would be as strange to the average Persian as to the foreign traveller. Travel and exploration in Africa are represented by *La Traversée de l'Afrique*, by M. E. Foa, who made his way from the Zambezi to the French Congo; *Trente Mois au Continent Mystérieux*, by M. Payeur-Didelot; and a volume of experiences rather uncommon for a woman, *Une Femme chez les Sahariennes*, by Mme. J. Pommeroi. The South African War is the theme of several volumes, among others M. G. Aubert's *Le Transvaal et l'Angleterre en Afrique du Sud*, and the first part of *La Guerre au Transvaal*, by MM. Frocord and Painvin, which bears the sub-title "L'Offensive des Boers," and covers the period from September to January.

FRENCH SOUDAN, an African possession of France, extending from Senegal and French Guinea on the west to the Egyptian-Soudanese province of Darfur on the east. To the north lie the desert regions of Sahara (French), and to the south the Ivory Coast (French), the Gold Coast (British), Togoland (German), Dahomey (French), Nigeria (British), and Cameroon (German). In the southeast the French Soudan touches French Congo, thus effecting a continuity of French territory from the Mediterranean to the South Atlantic. The estimated area of the French Soudan is about 300,000 square miles, and the estimated population 2,500,000. The most important town is Timbuctu, a trading centre on the upper Niger, with about 12,000 inhabitants. Up to 1899 the dependency was administered by a military commandant, but on October 17 of that year portions of the west and southwest of the French Soudan were placed under the administration of the colonies of Senegal, French Guinea, and Dahomey. The chief administrative authority of these colonies, aside from the home government, is vested in the governor-general of West Africa, resident at St. Louis, in Senegal. Also on October 17, 1899, the northern and northeastern part of the French Soudan was divided into two districts and placed under the administration of military officers. The budget of these two districts is incorporated with the local budget of Senegal. In 1900 the troops in the French Soudan numbered about 3400, of whom 2750 were natives. The local revenue and expenditure in 1899 balanced at 3,238,500 francs, and the appropriation of the home government, according to the budget of 1900, was 6,833,000 francs. The most important products and exports are rubber and gum, taken principally from the Niger regions; rice, millet, wheat, and earth-nuts are cultivated by the natives. Ostrich farms are being established. In some districts gold occurs. The principal import is cotton textiles. In 1898 the imports and exports amounted to 10,800,000 francs and 3,700,000 francs respectively.

For some years one of the principal obstacles to the progress of French administration in the Soudan has been the antagonism of the natives in the Lake Tchad region. In the latter part of 1899 the subjection of these tribes, who were led by the powerful chief Rabah, seemed near at hand. He was reported to have been defeated by the Gentil mission in February, 1900. In April the Fourreau-Lamy mission and the Voulet mission effected a junction, and an attack was made on Rabah's forces at Kussuri. The natives were routed and Rabah killed. Major Lamy, of the French troops, was also killed. Early in May the rest of Rabah's forces were defeated and scattered. Rabah, who was the son of a slave and who had been himself the slave of a former chieftain, was regarded as the strongest and most powerful opponent of the French in the central Soudan.

FRENCH WEST AFRICA comprises the colonies of Senegal, French Guinea, Ivory Coast and Dahomey, and the French Soudan (*qq.v.*). In 1899 the western and southern parts of the Soudan were united for administrative purposes with the colonies named above; and the northern and northeastern parts were divided into two districts, administered by military officers and dependent financially upon Senegal. The colonies are administered by a governor-general resident at St. Louis, in Senegal. The following figures are the latest available for the commerce of French West Africa, and are for the year 1898, except those of the Ivory Coast and Senegal, which are for 1899:

	Imports to	Exports from		Imports to	Exports from
Dahomey ...	\$1,919,300	\$1,454,900	Senegal.....	\$10,119,900	\$4,575,700
Guinea.....	1,755,800	1,518,300	Soudan.....	2,084,400	598,300
Ivory Coast..	1,143,600	1,150,000			

FRIENDLY ISLANDS, a group of islands in the southern Pacific lying to the east of Fiji, constitute a British protectorate. Local government is administered by a native hereditary monarch, King Jioaji Tubou II., the legislative power being vested in an assembly of two chambers, the one composed of 31 hereditary nobles, and the other of 31 representatives elected for terms of three years by popular vote. The Friendly group consists of three sub-groups—Tonga, Haapai, and Vavau; the total area is 374 square miles and the population about 23,000. The annual revenue, which is derived mainly from customs, a poll tax, and land leases, amounts to about \$100,000, and the expenditure is slightly less. The principal products of the islands are copra, fruit, tapa, mats, and fishing nets. Trade is largely with Australia and New Zealand. The leading export is copra, amounting to \$144,500 in 1899. In 1897 the imports and exports amounted to \$362,814 and \$315,760 respectively; in 1898, imports, \$171,166; and exports, \$192,031. The falling off in trade was mainly caused by a severe drought in 1897, which seriously damaged the coconut-trees.

Since April, 1886, British influence has been predominant in the islands, and a clause in the Anglo-German agreement of November 14, 1899, which was subsequently endorsed by the United States, practically gave Great Britain the protection of the group. This clause met the disapproval of King Jioaji, who demanded that sovereignty should be granted him and his descendants. On April 21, 1900, a British protectorate, which was favored by a majority of the native chiefs, but opposed by the king, was formally proclaimed at Niue Island, and on May 19 at Tonga. Sites for a fortified port and a coaling station were secured at Vavau harbor.

FRIENDS, SOCIETY OF, a sect whose members are commonly called Quakers, was founded in England in the seventeenth century. Because of persecution they emigrated to America, where, it is believed, they held a yearly meeting, a convention which exercises general supervision, as early as 1661. The Quakers have maintained a consistent opposition to all forms of war, and this, with other tenets of a rigid discipline, has precluded a large membership, though the quiet practice of high ideals has ranked them among the foremost of Christian reformers. The yearly meeting of 1900, which met at New York in June, asserted its attitude on the Chinese mission crisis, reaffirming the fundamental doctrines of the sect. The Quakers comprise **ORTHODOX FRIENDS**, who report 1279 ministers, 820 churches, and 91,868 members; **HICKSITE FRIENDS**, with an estimated strength of 115 ministers, 201 churches, and 21,992 members; **WILBURITE FRIENDS**, having (estimated) 38 ministers, 53 churches, and 4329 members; **PRIMITIVE FRIENDS**, with (estimated) 11 ministers, 9 churches, and 232 members. The most successful efforts of the Friends have been along educational lines. They now control several institutions of learning which are well equipped and well attended. In the latter part of June, 1900, a summer school of religious history was held at Haverford College. Nearly 400 students, representing a number of religious denominations, were attracted to its sessions, at which papers on various topics were presented by well-known specialists.

FRUITNIGHT, JOHN HENRY, M.D., an eminent physician of New York, died December 18, 1900, at the age of 49. He graduated from the College of the City of New York in 1872, and three years later received his medical degree from the Bellevue Hospital Medical College. He soon won a wide reputation as a specialist on the diseases of children. He was a member of the leading medical societies, and a trustee and consulting physician of St. John's Guild.

FUCHOU. See **CHINESE EMPIRE** (paragraph Cities of China).

FULLER'S EARTH. The production of Fuller's earth in the United States in 1899 amounted to 12,381 short tons, valued at \$79,644, as against 14,860 short tons in 1898, valued at \$106,500. The imports for 1899 were 10,320 long tons, valued at \$69,640, and came from England. Florida continues to be the chief source of the American supply. The American earth is best adapted for the bleaching of mineral oils, while the English gives better results with vegetable oils, such as cotton-seed.

FULLERTON, WILLIAM, jurist, died at Newburgh, N. Y., March 15, 1900, at the age of 82 years. He was born in Orange County, N. Y., graduated at Union College in 1838, and was admitted to the bar in 1841. He removed in 1852 to New York City, where he attained prominence as a lawyer, and became known as "the great cross-examiner." He was counsel in many notable cases, and appeared for the defence in the proceedings against William M. Tweed and for the plaintiff in the famous suit of Theodore Tilton against Henry Ward Beecher. In 1868 Governor Fenton appointed him to the Supreme Court Bench.

FURNEAUX, REV. HENRY, M.A., classical editor, died January 6, 1900. Born at St. Germans, Cornwall, June 26, 1829, he was educated at Winchester and at Corpus Christi College, Oxford. From 1854 to 1869 he was a fellow and tutor at Oxford, and from 1868 to 1892 was rector of Lower Heyford, near Oxford. His critical

study of Tacitus, which continued for many years, caused him to be recognized as an authority on that author. He published: *The Annals* of Tacitus, two vols. (1884 and 1891); the *Germania* of Tacitus (1894); the *Agricola* of Tacitus (1898); *Historical Notices of St. Germans, Cornwall* (1871); a part of *Collectanea*, Vol. III., publications of the Oxford Historical Society (1896).

GABOON. See FRENCH CONGO.

GABRILOWITSCHE, OSSIP, Russian pianist, born January 26, 1878, at St. Petersburg, made his first appearance in New York on November 12, 1900. In the conservatory at St. Petersburg he attracted Rubinstein's attention by his zeal and earnestness, and the great pianist, whose favorite he soon became, for many years personally supervised his instruction. In 1894 he won the Rubinstein prize, and was placed under Leschetitzky (at Vienna), with whom he studied for two years. He made his professional *début* in October, 1896, in Berlin, and astonished both critics and laymen by the sensuous beauty of touch and tone, and by the virility, dash, intellectual grasp, as well as by the emotional depth of his performance. His subsequent concerts in Austria, Sweden, Russia, and England were all in the nature of triumphs. He has played under such great conductors as Hans Richter and Arthur Nikisch. His compositions for the pianoforte exhibit decided musical talent and invariably produce a great effect at his concerts. See MUSIC.

GALVESTON HURRICANE. See TEXAS (paragraph Galveston Disaster), and METEOROLOGY.

GAMBIA, the oldest British possession in Africa, was formerly a part of the West African Settlements, and in 1888 was erected into a separate crown colony. The area of the colony proper, which lies at the mouth of the Gambia River, is 69 square miles, and the population at the end of 1898 was 14,266, of whom only 62 were whites. Mohammedans numbered 5300 and Christians 2385. The territories adjacent to the colony and under British protection have an area of 2700 square miles and an estimated population of 200,000. The chief town is Bathurst, having a population of 6000, on the island of St. Mary. The colony is under an administrator, Sir R. B. Llewelyn, since 1891, who is assisted by an executive council and a legislative council. The government grant for education was £362 in 1898, when there were 6 schools with an enrolment of 883 pupils. The official report for 1899 stated that in that year the colony was decidedly prosperous; the revenue was the largest on record, and the accumulated surplus at the end of the year amounted to £43,490. (The pound sterling is worth about \$4.866.) In 1898 the imports were £246,091; exports, £247,831; in 1899, imports, £240,906; exports, £241,936. In 1899 about one-half of the imports came from Great Britain, which, however, took only about one-ninth of the exports; about 80 per cent. of the exports were ground nuts, nearly all of which went to France. Other products and exports are hides, beeswax, cotton, rice, corn, and rubber. The rubber export has largely declined on account of the ruthless cutting of the trees. The circulation of specie is increasing, as cash payment in trade is supplanting the old barter system. It has been proposed to expend the surplus in the hands of the administration upon public works, such as swamp-filling near Bathurst, and the improvement of river navigation. In the fall of 1900 a number of native police and travelling commissioners were murdered. A state of unrest followed, and at the end of the year a native uprising on the northern bank of the Gambia was reported. A punitive expedition under Colonel Brake was then organized.

GARBAGE DISPOSAL. Among the 129 cities of the United States having a population exceeding 30,000, 41 dispose of their garbage by contract, 17 burn at least a part of their garbage, 6 sell it, 33 leave each householder to dispose of his own garbage as he pleases, and the remainder "dispose of it in other ways," the supposition being that it is either buried or dumped on land or in water. The statistics from which these summaries were made were taken from a bulletin of the Department of Labor, issued in September, 1900. During 1900 Chicago awarded a contract for the construction of a garbage crematory at an old electric lighting station which had been abandoned, but is to be put in service again. The heat from the burning garbage is to be utilized for running dynamos. The garbage and ashes in Chicago are kept separate by the householder, so that the waste to be burned is pure garbage. At Grand Rapids, Mich., arrangements have been made for a garbage crematory, different from the Chicago plant, but also employing the heat from the burning garbage to operate municipal electric lighting stations. Both plants will be put in operation in 1901. The heat from the garbage furnaces will be supplemented, when necessary, by regular boiler plants.

At Atlanta, Ga., a crematory of somewhat novel construction has been operated for a year, burning both garbage and night soil. The furnace or furnaces, for there are a number, are set back to back, on the down-draft principle. The refuse is fed into a large upper compartment, from which it falls, and is stoked through onto a

lower grate. The gases of combustion are passed over separate coke fires before going to the chimney, to insure their complete burning and prevent the generation of bad odors. Practically no fuel is used, it is said, except the coke in the fume cremators, the refuse supplying its own fuel.

GAS ENGINES. See GAS ILLUMINATING.

GAS, ILLUMINATING AND FUEL. During the past few years a new process for making water gas, known as the Dellwik-Fleischer method, has been coming to the front with rapidity, and in 1900 it apparently has gained a firm foothold on the continent of Europe and has been received with some favor in England. In the production of water gas steam is decomposed by contact with a coal fire, which has been raised to incandescence by means of an air blast. The raising of the fire to the requisite temperature and the production of gas take place alternately. When the heat has been reduced by the steam, the blowing must be resumed, and meanwhile the gas-making is stopped. In the old process about 15 minutes of each hour is available for the actual production of gas, while in the new system this has been increased to 50 minutes. Moreover, a large portion of the heat in the fuel is given off as producer gas during the blowing or heating period. In the Dellwik process, on the other hand, not only is the heating period reduced, but no producer gas is generated, so that altogether nearly twice as much water gas is produced by the new process from a given quantity of coal. The secret of the process is the adjustment of the air supply to the fuel in such a way that carbon dioxide is produced, instead of carbon monoxide. This is effected, in part, by using a comparatively thin layer of coal, and by introducing the air blast at the top and bottom alternately, so that the whole bed of coals is kept at a uniform temperature. The water gas produced by this process does not differ from that made in the usual way, except in cost of production. Thus far it has been used chiefly at isolated industrial establishments for heating, particularly where open fires are desired for welding and other purposes, but the method is being extended to illuminating gas plants. One of the great problems with the old water-gas process is how to utilize the producer gas before cooling and without storage, for it is too bulky for economical storage and contains so large a proportion of non-combustible matter that much heat is expended in raising its temperature after it is once cooled. The producer gas has been used heretofore at central gas works for generating the steam used in making water gas and for volatilizing oils with which it is enriched. At industrial establishments it has been used as a cheap fuel, readily adapted to various uses, but if the claims for the new water-gas prove good, as they promise to do, it will be both cheaper and more available than the producer gas. The Dellwik-Fleischer process was described by its inventor, Carl Dellwik, before the British Iron and Steel Institute, May 10, 1900, and by Professor Vivian Lewes before the Incorporated Institute of Gas Engineers (England), May, 1900. The two papers named were reprinted in the *Progressive Age* for July 16 and July 2, 1900, respectively. A somewhat earlier but more detailed description of the process, and particularly of its application, was given in *Engineering* (London), January 26, 1900, and reprinted in *Engineering News* for April 12, 1900.

Incandescent gas lighting is constantly extending and developing, and the use of the incandescent gas mantle is revolutionizing the gas-lighting industry both in Europe and America. The principle involved in the incandescent mantle is to use the gas to raise a refractory substance to a high temperature, at which it will give out light. For this purpose the calorific power of the gas is of more importance than its illuminating qualities. Accordingly, it is feasible to use the same gas for fuel as well as for illumination by employing the incandescent mantle, and this also obviates the necessity of enriching the water gas. These circumstances are all favorable to the Dellwik process, described above. The incandescent mantles appear to be used more extensively in Germany than elsewhere in Europe, largely on account of their low price in that country, due, it is said, to the fact that the inventor, Welsbach, was refused certain patents, which seem to have been granted elsewhere. Although other inventors as well as Dr. Auer von Welsbach have been concerned in the development of this system of lighting, he deserves credit for having put the mantle on a practical basis and also for an immense amount of experimental work which has thrown a flood of light on the whole subject. The principle involved in incandescent gas lighting is "the saturation of a natural combustible fibre with the salt of a metal, burning off the organic matter, and leaving a skeleton of the oxide of the salt of the metal used in so finely divided a condition that when subjected to the heat of any ordinary non-luminous flame it becomes incandescent" (from *The Incandescent Gas Mantle and its Uses*, by Professor Vivian B. Lewes, *Journal of the Society of Arts*, London, October 19 and 26, 1900). Professor Lewes also states that the "mantles of to-day nearly all consist of 99 per cent. thoria and 1 per cent. of ceria," thoria alone being non-luminous.

In striking contrast to the low pressures, a few ounces at most, under which arti-

ficial illuminating gas is almost universally distributed, Mr. F. H. Shelton, of Philadelphia, has recently installed several plants where the gas is sent out under considerable pressure. Thus, a 3-inch gas main carries gas under 10 to 25 pounds pressure from Phoenixville to Royersford, Penn., a distance of 23,015 feet. The pressure is produced at one end by a compressor and is reduced at the other end by regulators or governors. This pressure system was put in use December 29, 1899, and worked so well that during 1900 Mr. Shelton commenced other installations. One of these is located at Darby, near Philadelphia, and will be at the outset 22 miles of high-pressure pipe. From the works a 6-inch main will extend for three miles, then branch into a 3-inch and a 4-inch main, 4 and 5 miles long respectively. The gas will be distributed through the various streets under pressure, but at each house reducers will be placed. The territory is sparsely settled, and the large gas mains required under the usual low-pressure conditions would have proved so costly as to have made a gas supply quite out of the question. Another installation of the same sort, planned by Mr. Shelton, will convey gas under pressure from Riverton, N. J., to a village $4\frac{1}{2}$ miles distant, a 3-inch wrought-iron screw-jointed pipe being used, as at Phoenixville. In addition to these recent installations, gas has been sent out under pressure, for longer or shorter periods, at Louisville, Ky., Oakland, Cal., Chicago, Ill. (small section), and Danbury, Conn.

The use of gas engines for power is increasing rapidly. At the Paris Exposition the John Cockerill Company, of Seraing, Belgium, exhibited a 700 horse-power gas engine, using blast-furnace gas (or 1000 horse-power with regular illuminating gas). The first large blowing gas engine built by this company was set to work in November, 1899, and by June, 1900, the firm or its licensees had received orders for 71 such machines. Earlier in 1900 a list was published, showing 75 blast-furnace gas engines in use in five European countries, having an aggregate horse-power of 37,720, or an average of nearly 500 horse-power each. Large numbers of gas engines, large and small, are in use in this country.

An important legal decision affecting gas companies was rendered by the State Supreme Court of Massachusetts in the latter part of 1900. The court placed the responsibility of a gas explosion in the Boston street railroad subway on the Boston Gas Company. The explosion occurred on March 4, 1897, while the subway was under construction. Two 6-inch gas mains were exposed by an excavation in the street, and while a street railway car was passing over the excavation an explosion occurred. The car was thrown into the air and two other cars were upset, twelve persons being killed and many others injured. It is supposed that gas which had leaked from the mains had accumulated in the excavation, and was ignited by an electric spark from the trolley car. This decision affirmed a judgment of the lower court, by which \$3000 damages were awarded to a bootblack, who was injured by the explosion.

Acetylene gas is gradually coming into increased use in America and in Europe, particularly for isolated plants. Although reliable statistics are not available, it would seem as if the new illuminant had been more extensively adopted, at least for general lighting, in Germany than elsewhere. British and American consular reports state that there were 200,000 acetylene burners in use in Germany in 1900, and that 32 smaller towns and some railway trains were thus lighted. The gas is generated from calcium carbide by the action of water. The water may be dropped onto the carbide, as in the ordinary bicycle lantern, or a mass of carbide may be placed in a generator and the water added, while in other forms of the apparatus the carbide lumps are fed into the water from above. The latter process has some practical advantages, particularly as it results in the thorough slaking of the carbide, giving the maximum amount of gas and making it easier to draw off the resulting quicklime deposit in a semi-liquid state, instead of having to remove it by hand. Another advantage of thorough slaking is that less lime dust is carried by the gas to the burners occasioning less clogging. The full application of this process requires automatic feeding, but hand feeding at regular intervals of a day or less is possible, and can be used in small and inexpensive installations. Where automatic feeding is employed, it may be effected either by variations in the gas production or consumption, or by the application of independent power, such as an hydraulic motor. Where automatic feeding is not employed, a gas-holder is necessary to store the gas. A small holder is used, however, in any event, to aid in regulating the automatic feeding of the carbide. Calcium carbide is now sold generally throughout the United States, and costs from $3\frac{3}{4}$ to 5 cents per pound in 100-pound water-tight packages.

In addition to the use of acetylene for isolated plants, it is also available for lighting small towns and cities, and the *Acetylene Gas Journal* for January, 1901, states that some twenty or more small towns in the United States employ this gas to a greater or less extent. These are Winchester, N. H.; Fairfield, Lakeville, Litchfield, New Milford, and Salisbury, Conn.; Union Spring, N. Y.; Medford and Milbrook,

N. J.; Belleville, Milford (Pike County); Montrose and Wilkesbarre, Penn.; Beaufort and Manchester, Va.; Dixon, Ky.; Dana and West Lafayette, Ind.; Manchester and Whitmore Lake, Mich.; Cambridge, Milton, and Milton Junction, Wis.; and Salix, Ia.

GEAR, JOHN HENRY, United States senator from Iowa, died July 15, 1900. He was born at Ithaca, N. Y., in 1825, the son of an Episcopal minister, and after a common-school education was in business for a time at Burlington, Ia. In 1872 he was elected to the Iowa Legislature. He served four years as speaker, and gained such prominence that in 1877 he was elected governor on the Republican ticket, being re-elected on the expiration of his term of office. He was a member of Congress from 1887 to 1891, and assistant secretary of the treasury during President Harrison's administration. In 1894 he was elected senator from Iowa, and served on a number of important committees.

GEDDES, Sir WILLIAM DUGUID, principal and vice-chancellor of the University of Aberdeen, died at Old Aberdeen, February 9, 1900. He was born in 1828, and was educated at Elgin Academy and Aberdeen University. After teaching school for a time he was appointed director of the Aberdeen grammar school in 1853, and two years later was called to the chair of Greek at Kings College, Aberdeen, which he occupied for thirty years. In 1885 he became principal and vice-chancellor of the university, retaining the position to the time of his death. He made numerous critical contributions to classical literature, and his Greek grammar, which was published in 1855 and passed into its seventeenth edition in 1883, was well received; his work on *The Problem of the Homeric Poems*, which appeared in 1878, was praised by such scholars as Gladstone and Professor Freeman. Among his other writings are *Principles of Latinity* (1860); *Platonis Phædo* (1863); *The Philologic Uses of the Celtic Tongue* (1874); *Flosculi Græci Boreales* (1882). Besides these works, he wrote considerable verse in both Latin and English.

GEINITZ, HANS BRUNO, geologist, died at Dresden, January 28, 1900. He was born at Altenburg, in Saxony, October 16, 1814, and was educated at the universities of Berlin and Jena. He was appointed professor of mineralogy and geology in the University of Dresden in 1850. From the Geological Society of London he received the Murchison Medal in 1878, having been elected a foreign member of the society in 1857. Dr. Geinitz was chiefly interested in the geology and paleontology of the Paleozoic and cretaceous rocks of Saxony, and had paid special attention to the fauna and flora of the Dyas, or Permian, formation.

GEMS. The production of precious stones in the United States in 1899 amounted to \$185,770, and the imports to \$17,208,531. An important discovery was the finding of some large sapphires in the mines of Yogo Valley, Mont. On the other hand, some of the mines where gems were found by the ancients have been investigated during the year, and D. A. McAlister has given an interesting account of Cleopatra's emerald mines, which are located east of Edfu, in Egypt, and some fifteen miles in a direct line from the Red Sea. These mines are found in a mountain, which rises above the surrounding country, and the emeralds occur in schistose rocks, spread over a very large area. The search for emeralds in this locality was carried on before the beginning of the Christian era, and the mines consisted of a network of long, tortuous passages just large enough to permit of the body being dragged through. The Burmese ruby mines, which practically supply the world's demand, are said to have been worked since 1889. They are a concession, rented by the crown; but the enterprise until recently has not paid, owing to the high rental. The gems occur in placer deposits, which have been derived from a neighboring volcano, but as yet no gems have been found in the lava near the cone. In 1899 one gem was found that weighed 28 karats.

GEOGRAPHICAL DISTRIBUTION. See BIOLOGY.

GEOGRAPHICAL PROGRESS. See AFRICA; ARCTIC EXPLORATION; and ANT-ARCTIC EXPLORATION.

GEOGRAPHICAL SOCIETY, AMERICAN, founded in 1852, had in 1900 a membership of 1200. The society aims to encourage geographical exploration and discovery, to disseminate new geographical information, and to establish in a maritime city of the United States a central bureau of geographical knowledge. Society's house, 11 West Twenty-ninth Street, New York City. Corresponding secretary, Chandler Robbins. A new fireproof building, now in course of construction in West Eighty-first Street, on Manhattan Square, will be occupied by the society in the summer of 1901.

GEOLOGICAL SOCIETY OF AMERICA, founded 1888, had in 1900 a membership of 250, and sent to the press Volume XII. of its Bulletin. The annual (winter) meeting for 1900 was held at Albany, N. Y. The president in 1900 was George M. Dawson, of the Canadian Geological Survey. The summer meeting of 1901

will be held in Denver, Col. The president for 1901 is C. D. Walcott, United States Geological Survey; secretary, H. L. Fairchild, University of Rochester, Rochester, N. Y. The names of its presidents are notable, including James Hall, Alexander Winchell, J. William Dawson, N. S. Shaler, Edward Orton, B. K. Emerson, James D. Dana, G. K. Gilbert, T. C. Chamberlin, Joseph Le Conte, and J. J. Stevenson.

GEOLOGICAL SURVEYS. During the past year the United States Geological Survey has been most active continuing the investigation of problems connected with the water supply and the ore deposits of the Western States, while the stratigraphic side of the subject has not been neglected. The survey of the forest reserve area has also been continued, and parties sent to Alaska. The twentieth annual report has been issued, and is a monumental work of nine volumes. The State surveys have also been active; and among those which have issued publications are Iowa, New York, Alabama, Minnesota, Michigan, Indiana, New Jersey, Wisconsin, Missouri, and California. The Territory of Oklahoma has established a geological survey during the past year.

GEOLOGY. The eighth meeting of the International Geological Congress was held in Paris during August, 1900. These meetings take place every three years, chiefly for the discussion of the broader problems of geology. The results this year were not as marked, perhaps, as those of the Russian meeting held in 1897. Both before and after the congress there were a number of geological excursions to different parts of France, and the *Guide Geologique de France*, which was issued in connection with these trips, is a monumental treatise on the geology of France.

Physical Geology.—Davis questions whether many of the Tertiary formations of the eastern foothills of the Rocky Mountain region may not have been fluvial rather than lake deposits, as has been held for so long a time by many geologists (*Proceedings American Academy Science*, XXXV.). Hill, in describing the physiography of Jamaica, mentions an interior mountainous area of folded rocks which has an area of 7360 square miles. During a period of submergence subsequent to their formation these rocks were covered by a deposit of limestone, which now appears in the remnants of a plateau three thousand feet high around the central ridge, which is terminated seaward by high bluffs. At their base a low plain begins and extends to the sea.

W. O. Crosby calls attention to the smooth floor of crystalline rocks on which the Cambrian sandstones of the eastern Rocky Mountain foothills in Colorado rest. He considers that this and other smooth subcambrian floors in the United States are parts of the extensive surface of abrasion produced during a period of slow subsidence. In other words, it is probably a peneplain. Cadell considers that the absence of harbors on the West Australian coast is due to a recent slight elevation of the land, which followed a prolonged denudation. Raised beaches are mentioned as evidence, as some of them can be traced back twenty-five miles from the shore, being from twelve to eighteen miles in width, and representing plains of subaerial or marine denudation.

The occurrence of boulders in some of the carboniferous rocks in different regions has led geologists from time to time to claim the existence of a glacial period during this geological era, but the evidence in most cases has seemed rather doubtful. B. K. Emerson has recently described a series of boulders obtained from the carboniferous of the salt range of Northwest India, and considers that they are undoubtedly of glacial origin.

Additional recent publications of general interest are: *The Pleistocene Geology of the South Central Sierra Nevada and Origin of the Yosemite Valley*, by H. W. Turner, California Academy of Science, I., No. 9; *Variation of Glacier in 1898*, by H. F. Reid, *Journal of Geology*, VIII., 155; *The Geography of Chicago and its Environs*, by R. D. Salisbury and W. C. Alden, Bulletin Geographical Society of Chicago (1899); *The Glacial Gravels of Maine and their Associated Deposits*, by G. H. Stone (Monograph 34, United States Geological Survey); *The Illinois Glacial Lobe*, by F. Leverett (Monograph 38, United States Geological Survey); *The Moraines of Southeastern South Dakota and their Attending Deposits*, by J. E. Todd (Bulletin 158, United States Geological Survey).

Petrography.—Following the Pacific coast from Cape Horn to Alaska is a great mountain chain which has been uplifted in comparatively recent geologic time, ranging from the Jurassic to the Tertiary. This uplift was accompanied, and in part caused, by a great series of igneous intrusions. For a long time these rocks, which became uncovered by the extensive erosion of the land surface, were considered to be mainly of archæan age, but many recent investigations have shown that they are often cretaceous and tertiary; and the work of Lingren (*American Journal of Science*, April, 1900) calls attention to the prevailing intermediate character which they exhibit, standing between granite and diorite in composition.

Other papers worthy of notice are *Contribution to the Geology of the Northern*

Black Hills, R. D. Irving (*Annals of New York Academy of Science*, XIII., p. 187). Volume I. of the *Memoirs of the British Geological Survey* contains a monograph on the *Silurian Rocks of Great Britain* by Peach and Horne. *The Succession and Relation of Lavas in the Great Basin Region*, J. E. Spurr (*Journal of Geology*, VIII., p. 621); *Suggestions Regarding the Classification of Igneous Rocks*, W. H. Hobbs (*Journal of Geology*, VIII., p. 1). A new edition of Kemp's *Handbook of Rocks* has appeared. See FOSSIL BOTANY; PALEONTOLOGY; and GEOLOGICAL SURVEYS.

GEORGETOWN UNIVERSITY, a prominent Jesuit institution of learning at Washington, D. C., founded 1789. It comprises the college, medical and law schools, the college being constituted of the graduate school, undergraduate department, and astronomical observatory. The faculty includes 114 instructors; there are 480 students enrolled, of whom 146 are in the college, 104 in the school of medicine, and 253 in the school of law. The Riggs Memorial Library, containing 80,162 bound volumes and 47,121 pamphlets, an increase of 1362 volumes and 642 pamphlets for the year, is connected with the university. The university has productive funds to the amount of \$47,000; during the last college year its income was \$143,000, and \$8000 was received in benefactions. See UNIVERSITIES AND COLLEGES.

GEORGIA, a southeastern State of the United States, has an area of 59,475 square miles. The capital is Atlanta. Georgia is one of the original thirteen States.

Population.—According to the United States census, the population in 1890 was 1,837,353; in 1900, 2,216,331; increase for the decade, 378,973, or 20.6 per cent. The three largest cities, with population in 1900, are: Atlanta, 89,872; Savannah, 54,244; and Augusta, 39,441.

Agriculture.—The following shows the production and value of the principal crops for 1900: Corn, 34,119,530 bushels, \$19,448,132; wheat, 5,011,133 bushels, \$4,760,576; oats, 7,010,040 bushels, \$3,434,920; rye, 109,529 bushels, \$112,815; potatoes, 391,816 bushels, \$301,698; hay, 190,237 tons, \$2,425,522. Of the above, the most notable increase is in the wheat crop, which is more than double that of the preceding year. The total commercial crop of cotton for the season 1899-1900 was 1,345,699 bales. Federal officials estimated the area devoted to cotton culture in the season 1900-01 at 3,551,000 acres, and the yield at 172 pounds of lint cotton per acre. The wool clip for 1900 was estimated as follows: Number of sheep, 271,534; wool, washed and unwashed, 1,086,136 pounds; scoured wool, 651,682 pounds.

Mineralogy.—The estimated output of gold during the calendar year 1900 was 5813 fine ounces, valued at \$120,165. The amount of silver produced was inconsiderable. The production of coal during 1899 was 233,111 short tons, spot value, \$233,344—as compared with the preceding year a decrease in output, but an increase in value. The number of men employed in the mines and the average working time in 1899 were both greater than in the preceding year, and an increased tonnage would be expected. The mining labor, however, is largely composed of State convicts, and the inference is that the standard of efficiency was not so high as in 1898. Iron ore mined in 1899 aggregated 179,748 long tons of brown hematite, and 57,000 long tons of red hematite; total, 236,748 long tons, valued at \$235,343. Quarrying yielded granite to the value of \$411,344; slate, \$7500; marble, \$742,554; limestone, \$29,786—in all, \$1,191,184.

Manufactures.—The manufactured product of the State in 1900 amounted approximately to \$90,000,000 in value. The estimated value of Atlanta's wholesale trade for the year was \$34,000,000. Shipments of yellow pine lumber for the eleven months ending with December 1, 1900, were 19,679,141 feet, and the total amount cut during the same period was 19,746,360 feet. Thirty-six new cotton mills, containing a total of 240,036 spindles and 3166 looms, were established in Georgia during the year 1900, and a number of old mills were enlarged. One new bleaching mill was built and put in operation. In 1899 there were 79 cigar factories, and 8 tobacco factories in operation, and the output during the calendar year was 3,962,316 cigars, and 9960 pounds of smoking tobacco. Grain and fruit distilleries in operation during the fiscal year ended June 30, 1900, numbered 135, and the amount of fruit brandy produced was 2408 gallons; spirits rectified, 205,784 gallons; distilled spirits gauged, 795,561 gallons; and fermented liquors produced, 113,380 barrels. Georgia and North Carolina together produced 17,835 tons of pig-iron in 1899, and 28,084 tons in 1900.

Commerce.—During the year ended December 31, 1900, the valuation of the imports and exports at the principal ports was as follows: Brunswick, imports, \$31,101; exports, \$7,786,261; Savannah, imports, \$512,763; exports, \$49,539,933; Atlanta, imports, \$33,677; exports, none; total imports, \$577,541; total exports, \$57,326,194; total foreign trade, \$57,903,735.

Railroads.—The new railway construction for the calendar year 1900 amounted to 104.21 miles, giving the State a total mileage of 5791.51.

Education.—In 1899 the school population was 756,900; enrolment in public

schools, 469,107; average daily attendance, 265,480. There were 9577 teachers, 6622 buildings used as school-houses, and public school property valued at \$3,977,070. The revenue was \$1,951,107; and expenditures, \$1,937,954, of which \$1,701,748 was for teachers' and superintendents' salaries. There were 109 public high schools, with 239 teachers and 5566 students; 71 private secondary schools, with 222 teachers and 3695 students; 2 public normal schools, with 16 teachers and 769 students; and 4 private normal schools, with 18 teachers and 277 students. Eleven colleges and universities for men and for both sexes reported 106 professors and instructors, 1927 students, and a total income of \$150,937; 1 school of technology reported 20 professors and instructors, 332 students, and a total income of \$29,000; and 11 colleges and seminaries for women reported 170 professors and instructors, 1494 students, and a total income of \$144,488. The professional schools comprised 2 theological schools, with 7 instructors and 98 students; 4 law schools, with 16 instructors and 77 students; and 3 medical schools, with 46 instructors and 454 students.

Banks.—On October 31, 1900, there were 30 national banks in operation and 18 in liquidation. The active capital aggregated \$4,356,000; circulation, \$2,727,097; deposits, September 5, 1900, \$11,395,322; and reserve, \$2,802,762. The State banks numbered 144, and had capital, \$8,735,328; deposits, \$22,009,064; and resources, \$38,929,686; and private banks, 9, with capital, \$702,088; deposits, \$251,171; and resources, \$1,084,869. Exchanges at the clearing houses at Atlanta, Macon, Augusta, and Savannah aggregated \$402,425,821, an increase of \$115,751,186 in a year.

Finances.—The total receipts at the State treasury for the fiscal year 1900 were \$3,542,069, and the disbursements, \$3,664,700. During the year the taxable wealth increased in value \$19,203,542. The tax rate in 1899 was \$5.36 per \$1000, and in 1900 was reduced to about \$4.30 per \$1000.

National Guard.—The Georgia volunteers consist of the following: Generals and staffs, 15; cavalry, 390; artillery, 142; infantry, 3416. The total number of troops authorized is 12,344. The total number in the State liable to military service is 290,000, and the State appropriation for military purposes is \$25,000.

Proposed Negro Legislation.—When the Assembly convened Governor Chandler recommended it to submit to the people two important constitutional amendments dealing with the negro question. One of these was to authorize a change in venue of criminal cases when in the judgment of the governor or of the judge of the Superior Court of the county in which the crime was alleged to have been committed, it was necessary to protect the prisoner from violence and secure the orderly enforcement of the law. The governor thought that such an amendment would tend to diminish lynchings by giving authority to remove the prisoner for trial to some section of the State where popular excitement had not been aroused. The second recommended amendment was to provide for a suffrage based on an educational or property qualification, or both. In 1899 a similar amendment, but one which would have acted to curtail the negro vote to a much greater extent, was defeated in the House. The Legislature declined in 1900 to act on either of the governor's recommendations.

General Tax.—In 1898 a Tax Commission was appointed by the Legislature, which reported in 1899, recommending an income tax, a collateral inheritance tax, and a special direct tax on all *quasi* public corporations. The House at that time referred the proposed measure to the governor for transmission to the succeeding Legislature. In 1900 the Legislature passed a general tax measure to some extent on the lines of that proposed by the commission. The measure provided for a direct *ad valorem* tax on real estate and personal property, and for a direct tax upon many classes of business, such as gaming, peddling, insurance, pawnbroking, matrimonial agencies, and the like, and a tax upon the total property of manufacturing and other plants. In order to ascertain what this property was, the comptroller-general was authorized to demand from every manufacturing company a categorical answer to the following questions:

First. What is the nominal value or cost of the real estate of the company, including the buildings thereon? Second. What is the fair market value thereof? Third. What is the nominal value of the cost of the machinery of every kind? Fourth. What is the fair market value thereof? Fifth. What is the value of the real estate not used in the conduct of the business of the company? Sixth. What is the value of raw material on hand on the day fixed for the return of property for taxation? Seventh. What is the value of manufactured goods or articles on hand, whether at the principal office or in the hands of agents or commission merchants? Eighth. How much money is on hand or in banks? Ninth. What is the gross nominal value and what is the fair market value of all notes, accounts, bonds, and other obligations for money or property? What is the value of all other property of every description?

The tax upon railways, telegraph, telephone, and express companies was directed

to be not less than 2½ per cent. of the gross receipts of those companies. Banks were to be taxed upon their real estate, but not upon their capital; however, the shares of the stockholders of the bank were to be taxed to their full value in the county where the bank was located.

Legislation.—Pensions for Widows of ex-Confederate Soldiers.—A constitutional amendment was adopted at the election in October, 1900, authorizing the payment by the State of annual pensions to the widows of ex-Confederate soldiers who, by reason of age, infirmity, blindness, or poverty, were unable to obtain a living for themselves. To carry out the purpose of this amendment an act was passed by the General Assembly and approved, December 9, 1900, providing that a pension of \$60 per annum should be paid to every widow of a soldier who enlisted from Georgia and fought for at least six months in the Confederate cause, provided, however, that such widow submitted proofs to show that she was on January 1, 1900, a *bona fide* resident of the State and was unable to support herself by her own exertions. This act is of especial interest, because the pensions are much smaller than those (\$96 minimum) allowed under the federal laws to the widows of Union soldiers, and also because Georgia apparently makes total poverty a prerequisite for obtaining pensions, while the federal laws allow widows to have a maximum independent income of \$250 per annum. The reason for the restrictions of pensions by the Georgia Legislature is, probably, that since the State has indirectly to pay its *pro rata* share for the payment of pensions to Union soldiers, it is too poor to afford such liberal pensions as are given by the general government, which levies upon both North and South for this purpose.

A resolution was approved on December 19, 1900, appointing a joint committee from the Senate and the House, who were instructed to confer with the Legislatures of other States with the view of bringing about the submission of an amendment to the Constitution of the United States which should secure the election by popular vote of the President, Vice-President, and United States senators.

A resolution was approved on December 15, 1900, requesting the Congressional representatives of Georgia to endeavor to obtain from Congress an appropriation sufficient to deepen the river and harbor at Savannah from twenty-six to twenty-eight feet at mean high tide. The resolution set forth that such harbor improvement would "naturally result in greatly increasing the commerce of that port and in benefiting largely, not only the people of Savannah, but also the people generally of the entire southeastern section of the country." The Plant Railway System, the Seaboard Air-Line System, and the Central of Georgia Railway System have terminals at Savannah, and coasting lines from New York, Boston, Philadelphia, and Baltimore have wharves there. The imports of merchandise at the port of Savannah have averaged yearly nearly \$400,000 since 1890, while the exports of merchandise have increased from \$30,947,328 in that year to \$49,539,933 in 1900.

Elections.—In the State election of 1900 the Democratic candidate for governor, Allan D. Chandler, received approximately 91,000 votes, while the Populist candidate, George W. Trayler, received approximately 22,000. The Populist vote was thus less than half what it was in 1898, when it stood at 50,000. In neither of these years was there a Republican candidate. The eleven Democratic representatives of Georgia in Congress were re-elected in 1900. The State Legislature in 1899 consisted, in the Senate of 43 Democrats and 1 Republican, and in the House of 170 Democrats and 5 Populists. The Legislature of 1901 will consist of 166 Democrats and 9 Populists in the House, and 43 Democrats and 1 Republican in the Senate. In the national election Bryan received 81,700 votes and McKinley 35,036. In 1896 Bryan received 94,232 and McKinley 60,091. The fact that the Presidential vote was so much smaller in 1900 than in 1896, and that the Democratic candidate for governor ran 10,000 votes ahead of his ticket seems to indicate that comparatively little interest was taken in the national campaign. This was said to be due in part to the feeling in Georgia that the anti-imperialistic issue was ill taken. On November 6, by a unanimous vote in both branches of the Legislature, Augustus O. Bacon was elected to succeed himself as United States senator for the six-year term, beginning March 4, 1901.

State Officers and National Representatives.—State officers for 1900: Executive—governor, Allen D. Chandler; secretary of state, Philip Cook; treasurer, W. J. Speer; comptroller, W. A. Wright; adjutant-general, J. M. Kell; attorney-general, J. M. Terrell; superintendent of education, G. R. Glenn; commissioner of agriculture, O. B. Stevens—all Democrats.

Judiciary: Supreme Court—chief justice, T. J. Simmons; associate justices, Samuel Lumpkin, H. T. Lewis, A. J. Cobb, W. A. Little, W. H. Fish; clerk, Z. D. Harrison—all Democrats.

Congressional representatives for 1900 (56th Congress): R. E. Lester (Savannah), J. M. Griggs (Dawson), E. B. Lewis (Montezuma), W. C. Adamson (Carrollton), L. F. Livingston (Kings), C. L. Bartlett (Macon), J. W. Maddox (Rome),

W. M. Howard (Lexington), F. C. Tate (Jasper), W. H. Fleming (Augusta), W. G. Brantley (Brunswick)—all Democrats.

Senators for 1900 (56th Congress): Augustus A. Bacon (until 1901), of Macon, and A. S. Clay (until 1903), of Marietta.

Judiciary: Supreme Court—same as for 1900.

State officers and national representatives for 1901: Executive—same as for 1900 except: Treasurer, R. E. Park; and adjutant-general, P. G. Bird.

Congressional representatives for 1901 (57th Congress): Same as for 1900.

Senators for 1901 (57th Congress): A. S. Clay (until 1903), A. O. Bacon (until 1907).

GERARD, JAMES WATSON, LL.D., a lawyer of New York, died in that city January 28, 1900. He was born in New York in 1822, and graduated at Columbia in 1843. He studied law and became an authority on questions of real estate, his volume *Titles to Real Estate in New York City* being regarded as a standard work. He was interested in public education, and during the mayoralty of Mr. Hugh J. Grant was a commissioner of education. He was a State senator in 1876-77. He retired from law practice in 1880. Among his works, besides the one mentioned, are: *The Pelican Papers*, a satire; *The Peace of Utrecht*; *Title of the Corporation and Others to the Streets, Wharves, Lands, and Franchises in New York City*; *Aquarelles*, verse; *Ostrca, or the Loves of the Oysters*, humorous verse.

GERMAN BAPTISTS. See DUNKARDS.

GERMAN EAST AFRICA. See COLONIES.

GERMAN EVANGELICAL SYNOD OF NORTH AMERICA, a type of the state church of Prussia, was originated in 1840 from a union of Lutheran and Reformed elements. The synod makes the Bible its rule of faith and life, accepting the Augsburg confession, Luther's catechism and the Heidelberg catechism as correct interpretations of it, but allowing liberty of conscience where they disagree. During the past year this body has shown a fair amount of progress, and is now represented by 909 ministers, 1129 churches, and 203,574 communicants.

GERMAN LITERATURE. *History and Biography.*—Among the large number of ponderous histories, source books, local annals, and other historic monographs which have appeared during the past year, there are comparatively few which possess the quality and the general interest to warrant their inclusion in the literature of the year. Two works on the history of the Middle Ages deserve to be emphasized—Professor H. Grisar's *Geschichte Roms und der Päpste im Mittelalter*, which has been appearing in sections since 1898, and of which the first volume is now ready; and a *Geschichte Italiens im Mittelalter*, by Professor Ludwig Hartmann, of the University of Vienna, the second part of which deals with the "Romans and Langobardi down to the division of Italy." One of the most serious of recent contributions to German history is Professor Hans Prutz's *Preussische Geschichte*, of which three volumes appeared in 1900. Professor Prutz, who has for many years occupied the chair of history at the University of Königsberg, is already known in literature for his biography of the Emperor Frederick I. and a long series of important historical monographs. His new work, as far as it has yet appeared, brings the history of Prussia down to the year 1812. Two works of importance to students of the history of Saxony are Dr. Paul Hassel's *Life of King Albert of Saxony*, the second part of which covers the period while he was crown prince; and a comprehensive history of the city of Dresden, by Dr. Otto Richter, who is in charge of the city archives, and thus has exceptional opportunities for gathering material.

Of the many biographies, memoirs, and volumes of correspondence possessing historic interest, brief mention should be made of the following: The third and concluding volume of Von Poschinger's *Life of the Emperor Frederick*, covering the years 1870-88; a military biography of Field-Marshal Count von Moltke, by W. Bigge; the first volume of the *Political Correspondence of Maurice of Saxony*, edited by Brandenburg; and the *Correspondence Between Frederick William III., Queen Louise and Alexander I.* Bismarck literature shows little sign of abating. Of special historic interest is the correspondence between Bismarck and the Emperor William I., edited by Johannes Penzler, the author of that voluminous history of the chancellor's last years, *Fürst Bismarck nach seiner Entlassung*; and Heinrich von Poschinger's latest contribution to the subject, *Fürst Bismarck und die Diplomaten*, covering the years 1852-91. Of more distinctly personal interest are Blum's volume of recollections of Bismarck and the recently published collection of Bismarck's *Briefe an seiner Braut und Gattin*, which reveal the Iron Chancellor in a new and unexpected light.

Literary History and Criticism.—Works of mingled literary and biographical interest are quite numerous this year. Under this head may be mentioned several monographs relating to Gutenberg, the fifth centenary of whose birthday was celebrated on June 24. These include an *Investigation of the History of the First*

Book-printing, by P. Schwenke, and *Gutenberg and His Most Famous Successors*. Walther von der Vogelweide has been made the subject of an exhaustive, philological and historical study by Professor Konrad Burdach, of the University of Halle, the first volume of which contains upward of three hundred pages. Of the two recently published monographs on Dante, that by Chr. Hönes is to be commended for its simplicity, while that of Karl Federn is interesting for the deep insight which it shows into the poet's personality. Ibsen is the subject of an extensive biography by Ramon Woerner, which is not merely a compilation from Scandinavian sources, but shows a keen critical discrimination, that gives the volume a distinct individual value. *Aus der Frühzeit* is a recent volume by the clever young novelist Ricarda Huch, best known for her story *Ludolf Ursleu*. In these essays she draws some skilful portraits of Novalis and the women of his group. An enjoyable volume is Julius Rodenberg's *Jugenderinnerungen*, a book full of memories of men like the poet Freiligrath, Marschner, the composer, and many of their contemporaries. A pretentious work is *Die Deutsche Litteratur des neunzehnten Jahrhunderts*, by Richard W. Meyer. As a useful collection of facts concerning German writers and their works down to the closing days of the century, it will, doubtless, serve its purpose. As a critical estimate of their relative worth it is superficial and disappointing. Finally, we may mention the *Life and Works of Conrad Ferdinand Meyer*, by A. Frey; a study of Alphonse Daudet, by B. D. Diederich; and two monographs upon Marie von Ebner-Eschenbach, written, respectively, by M. Necker and A. Bettelheim.

Fiction.—So long as the drama continues to engross the attention of the best writers in Germany, the really significant fiction of the year may be, as is the case for 1900, very briefly summed up. Among the veteran novelists, Paul Heyse, now in his seventieth year, contributes only a *Neues Märchenbuch*, a collection of simple, unpretending fairy stories, full of tenderness and a love of nature. "Die Nixe," unquestionably the best in the collection, is the story of a fisherman, who, finding a water-nymph entangled in his nets, takes her home, but soon has cause to wish himself well rid of his lively guest. Love of nature is the dominant note in P. K. Rossegger's new novel, *Erdsegen*. It is the story of a young journalist who, in fulfilment of an idle wager, hires himself out for a year as a farm servant, and becomes so charmed with the simple life and healthful toil that he ends by marrying the farmer's daughter and settling down to live as a peasant among peasants. A sharp contrast is offered by the novels of Adolf Wilbrandt, another writer of the older generation, who lays his scenes among people of culture and refinement. *Das Kind* is the story of a young girl who is saved from a foolish marriage by the hero, a fine specimen of intellectual manhood. *Erika* deals with the same interesting situation that forms the basis of Max Dreyer's successful play, *Drei*—that of a husband who having betrayed the wife of his friend, finds himself no longer able to believe in the fidelity of his own wife, and so destroys the happiness of his home. Among the younger novelists, Wilhelm von Polenz and Georg von Ompteda continue to produce interesting work. *Thekla Lüdckind* is a realistic study of an ill-assorted marriage, the slow martyrdom of a woman with lofty ideas, who finds when too late that she has bound herself to a man of coarse nature and intellectual poverty. *Eysen* is the name of the most significant of Ompteda's recent books, which is further described in the sub-title as a story of a "Deutscher Adel um 1900." It deals with the fortunes of a whole family, the Von Eysens; and whether the outcome in each individual case is for good or ill, the underlying principle is the same throughout—that only those who will work and can adapt their work to the requirements of the present day can hope for happiness. Ompteda has two other volumes to his credit this year, *Lust und Leid*, a collection of short stories, and *Die Radlerin*, a pleasant little love story with a tranquil ending. *Der Holzhändler* is the title of a gloomy story by Max Kretzer—the story of a man who kills his wife through jealousy, and after a lapse of fifteen years takes his own life with the selfsame weapon while laboring under a hallucination. Hermann Stehr has already done some promising work in psychological fiction; there was much in his first story, *Auf Leben und Tod*, that is reminiscent of Dostoevski. His latest stories are *Lenore Griebel*, an interesting study of a special type of woman on the border line between sickness and health, and pervaded from first to last with the atmosphere of the hospital; and *Der Schindelmacher*, a powerful variation on the motive of *King Lear*. Other stories which deserve passing mention are *Der Weg zum Erkenntniss*, by Wilhelm Arminius, which deals with some problems offered by the new woman; *Offenbarungen des Wachholderbaumes*, by Bruno Wille, which one German critic has defined as a "bible of pantheism rather than a novel;" Megede's latest story, *Felicie*, which, according to the sub-title, is a story drawn "from the letters of a fool;" *Das Opfer*, by Richard Voss, and *Peterl, the Story of a Dog*, by Ossip Schubin.

GERMAN METHODIST CHURCH. See EVANGELICAL ASSOCIATION.

GERMAN SOUTHWEST AFRICA, a German protectorate, having an Atlantic coastline of about 930 miles, between the Cunene and Orange rivers, lies to the south of Angola, to the west of British South Africa and northern Cape Colony, and to the north of western Cape Colony. It consists chiefly of Damaraland and Great Namaqualand, its total estimated area being 322,450 square miles, and the population 200,000. At the beginning of 1899 the European inhabitants numbered 1840, of whom 1557 were Germans. The southern part of the protectorate is sometimes called Lüderitzland. The coast lands, the southern part of the protectorate, and much of the eastern part are barren, but large areas of the interior are fit for cultivation. The coastline is broken near its middle by the British possession of Walfisch Bay (*q.v.*), the area of which is only about 430 square miles. The protectorate is administered by an imperial commissioner, stationed at Windhoek, 180 miles east of Walfisch Bay; there are also government stations at the principal towns. There is a small military force, consisting of natives and Germans, of which the latter number about 760. Financial statistics in marks have been reported as follows (the mark being worth 23.8 cents): For the fiscal year 1896, revenue, 156,860; imperial subvention, 1,700,000; expenditure, 1,991,480; 1899 (estimates), revenue, 570,000; imperial subvention, 6,909,000; expenditure, 7,479,000; the estimated imperial contribution for the fiscal year 1901 is 7,181,300 marks. The country is but little developed, and large tracts are still unexplored. Agriculture is of little account, but the rearing of cattle and sheep is important. For a number of years the rinderpest has been prevalent. Various metals occur, including copper and gold; expense of working and transportation, however, practically prevent the exploitation of the former, while the latter has not yet been found in paying quantities. The two principal exports are ostrich feathers and guano, being valued at over 80 per cent. of the total exportation. The leading imports are foodstuffs, ironware, and textiles; of the imports, about 82 per cent. come from Germany. Imports in the fiscal year 1897 were valued at 4,997,285 marks; exports, 1,274,792 marks; 1899, imports, 5,868,281 marks; exports, 915,784 marks. The territory along the coast is held by the German Colonial Company for Southwest Africa, and in Damaraland the Southwest Africa Company, an Anglo-German syndicate, holds concessions for mineral exploitation, including the copper mines of Otavi. Immigration is encouraged, and in 1900 provision was made for loans to German settlers of from 3000 to 4000 marks without interest.

The principal ports, excepting Walfisch Bay, are Sandwich Harbor, the new harbor of Swakopmund, and Lüderitz Bay, or Augra Pequeña, which was the first German settlement in Africa (1883). Continued improvements are being made to the harbor of Swakopmund, which promises, it is said, to equal that of Walfisch Bay. A railway, of which 80 miles were completed in the fall of 1899, is being constructed from Swakopmund to Great Windhoek, some 180 miles distant. About 400 laborers were engaged on this work in 1899. In May, 1900, an Anglo-German company completed arrangements for the construction of a railway from Otavi, in German territory, to Great Fish Bay, in the southern part of Portuguese West Africa, a distance of about 400 miles. This projected road was regarded as the first section of a line that will connect the Cape-to-Cairo Railway with the Atlantic coast. Such a connecting line will necessarily pass through the German protectorate, for in November, 1899, an agreement was made by the German government and the British South Africa Company whereby the latter, in return for railway concessions in German East Africa, engaged to construct no road from the Cape-to-Cairo line through Rhodesia or Bechuanaland and German territory, except from such a point on the Anglo-German frontier as the German government should agree upon, and until such a road had been constructed, to build no similar line north of the fourteenth parallel of south latitude. See COLONIES.

GERMANY, an empire in north central Europe, consists of 25 states and the imperial provinces of Alsace and Lorraine. The states comprise 4 kingdoms, 6 grand duchies, 5 duchies, 7 principalities, and 3 free towns. The imperial capital is Berlin.

Area and Population.—The total area is 208,830 square miles; of this territory the kingdoms of Prussia, Bavaria, Würtemberg, and Saxony include 134,603 square miles, 29,282 square miles, 7528 square miles, and 5787 square miles respectively; the areas in square miles of the grand duchies of Baden and Mecklenburg-Schwerin are 5821 and 5135 respectively, and Alsace-Lorraine has 5600 square miles. All of the other states are smaller. The total population, according to the census of 1885, was 46,855,704; and, according to the census of 1895, 52,279,901, of whom 25,661,250 were males and 26,618,651 females. The foreign-born inhabitants numbered 486,190; the majority of these are Poles, living in eastern Prussia. The census of 1895 showed 28 cities with over 100,000 inhabitants, 29 with between 50,000 and 100,000, and 121 with between 20,000 and 50,000. The populations of the cities with over 200,000 inhabitants were as follows: Berlin, 1,677,304; Hamburg, 625,552; Munich, 407,307; Leipzig, 399,963; Breslau, 373,169; Dresden, 336,440; Cologne, 321,564; Frankfurt-

on-Main, 229,279; Magdeburg, 214,424; Hanover, 209,535. About 13,500,000 persons of German blood live in Austria-Hungary, Russia, and Switzerland.

A census of Germany was taken on December 1, 1900, but only fragmentary returns are available. The total population of the empire was 56,345,014, an increase of 7.78 per cent. in five years; the females outnumbered the males by about 1,000,000. One of the most noteworthy tendencies shown by the census is the unprecedented growth of industrial centres during the last five years. There are now 33 cities with a population of over 100,000, and all but one of these—Crefeld—showed a great increase over the preceding census. Accordingly, it appears that "the Germans are becoming more and more a manufacturing people. The landowners are becoming alarmed, and are even discussing the advisability of importing Chinese to work on their farms." The population of some of the large cities, according to the new census, is as follows: Berlin, 1,884,151 (including the suburbs, about 2,600,000); Hamburg, 705,738; Munich, 499,959; Leipzig, 455,089; Dresden, 395,349; Frankfort-on-Main, 288,489. See article CENSUS.

In 1899, 23,740 persons left Germany to cross the ocean; of these, 19,016 went to the United States and 1089 to Brazil. The German emigrants to Brazil in 1898 numbered 477. There has been a great falling off in the total number of German emigrants since 1894, when 120,089 persons left the country. This decline is ascribed to commercial and industrial prosperity and to the care taken by the government for the welfare of the working classes, while the increase to Brazil is largely due to a concession obtained by the Hanseatic Colonization Society. For the number and influence of Germans in the latter country, see the article BRAZIL.

Government.—The empire is a federation of the German states under a constitution dating from April, 1871, according to which the chief executive and military authority is vested in the King of Prussia, who bears the title *Deutscher Kaiser*, or German emperor, and succeeds to the throne by the law of primogeniture. The present emperor, of the House of Hohenzollern, which has been the ruling family of the empire since its formation, is William II., who was enthroned in 1888. The heir apparent is Prince Frederick William, who was born in 1882. The emperor appoints the imperial chancellor, or first minister of the empire, by whom the former's edicts must be countersigned, and who thereby becomes responsible for them. The constitution places the legislative power with two deliberative bodies—the *Bundesrath*, or upper house, composed of 58 delegates, chosen for each session by the governments of the several states, and the *Reichstag*, or lower house, consisting of 397 members, elected for terms of five years by popular vote in the proportion of 1 representative for about each 131,000 inhabitants. The emperor convokes these bodies annually, and has no veto on the laws enacted by them. The members of the *Reichstag* elect one of their number as president, and the *Bundesrath* is presided over by the imperial chancellor. The latter is the only minister responsible to the legislative bodies. Unlike the members of the usual ministry or cabinet, as in Great Britain or the United States, the imperial secretaries of state do not constitute a separate ministerial body, and under the chancellor they perform their functions independently of each other.

There are uniform codes of civil, commercial, and criminal law throughout the empire; but all the courts, except the *Reichsgericht*, or supreme court, are under state rather than imperial authority. The supreme court sits at Leipzig.

Army.—All Germans capable of bearing arms render a nominal service in the army or navy of at least six years, the term of service usually beginning with the twenty-first year. As about 360,000 new men are liable for service each year, only a certain number, chosen by lot, enter the regular army, the rest being assigned to a reserve for a term of twelve years. So large is this reserve that many of its members never receive any military training. Pursuant to the military law of 1899 the peace strength of the regular army in 1903 will be 495,500, while the present organization of reserves guarantees Germany in time of war an army of over 3,000,000 men.

A report for 1899, presented to the *Reichstag* in the latter part of 1900, included the following: "The total number of men liable for service, including the surplus for previous years, was 1,696,760. Of these, 716,998 were 20 years of age, 486,978 of 21 years, 362,568 of 22 years, and 130,216 of more than 22 years. The whereabouts of 94,224 were unknown, and 97,800 others failed to appear and sent no excuse; 427,586 had already undertaken military duties, 579,429 cases were either adjourned or the men rejected (for physical reasons), 1245 were excluded from the service, 43,196 were exempt, 112,839 were incorporated in the naval reserve, 226,957 were called upon to join the colors, leaving a surplus of 5187; there were 23,266 volunteers for the army and 1222 for the navy. Of the 226,957 who joined the colors, 216,880 joined the army as combatants and 4591 as non-combatants, and 5486 joined the navy. Of the 5486, the maritime population furnished 3132 and the inland 2354. There were 21,189 men who entered the army before attaining the regulation age,

and 1480 under age who entered the navy; 33,652 of the inland population and only 189 of the maritime were condemned for emigrating without leave, while 14,150 inland and 150 maritime cases were still under consideration at the end of the year."

Navy.—The German fleet was reported to comprise in February, 1900, the following vessels, transports, and ineffective vessels being omitted: 8 second-class battle-ships and 6 building, 8 third-class battle-ships, 19 coast-defence vessels, 8 second-class cruisers and 2 building, 5 third-class cruisers, 8 torpedo gunboats, 35 first-class torpedo boats, 103 second-class and third-class torpedo boats. The tonnage laid down in 1900 was reported as follows: Battle-ships, 44,400 tons; cruisers, 15,300; torpedo vessels, 2100; total, 61,800; while the total tonnage under construction in the latter part of the year was: Battle-ships, 111,000 tons; cruisers, 32,500; torpedo vessels, 2800; total, 146,300. The naval complement for 1899-1900 comprised over 1100 executive officers, 18,000 seamen, and about 7500 others.

During 1900 the navy was increased by two battle-ships, the *Wittelsbach* and the *Kaiser Barbarossa*; one large cruiser, the *Prince Heinrich*; and four small cruisers. At the end of the year there were four battle-ships, one large cruiser, and one gunboat under construction. See a succeeding paragraph on the Naval Bill.

Finance.—The imperial revenue is derived mainly from customs duties, excise, and posts, telegraphs, and state railways. Deficits are made up by assessments on the several states, levied in proportion to the number of inhabitants. The monetary standard is gold, and the monetary unit is the mark, valued at 23.8 cents. Revenue and expenditure in marks for fiscal years have been reported as follows, the figures for all but the first year named being budget estimates; that part of the revenue derived from customs and excise is also stated:

	1897-98.	1898-99.	1899-1900.	1900-01.
Revenue	1,443,426,000	1,412,886,000	1,526,188,000	1,979,135,000
Expenditure	1,456,563,000	1,441,579,000	1,551,709,000	2,058,334,000
Customs and excise.....	792,480,000	762,332,000	803,909,000	.....

The largest imperial expenditures are for the departments of war and of finance; according to the budget for the year ending March 31, 1900, the expenditure for the former amounted to 519,824,500 marks, and for the latter 481,908,400 marks. The total funded debt at the end of March, 1898, amounted to 2,182,246,800 marks, the greater part of which bore interest at 3½ per cent. In addition there is an unfunded debt, which on the same date amounted to 120,000,000 marks.

In September, 1900, it was announced that several banking firms in Hamburg and New York had subscribed for 80,000,000 marks (\$19,040,000) of 4 per cent. German imperial treasury bonds, payable in 1904 and 1905. By the consent of the German government this loan was to be placed upon the market in the United States; and, as it represented the minimum expenditure already incurred through the disturbances in China, the German press, especially the organs for the Radicals, Socialists, Agrarians, and Clericals, strongly denounced the action, which they considered revealed to the world a weakness in Germany's financial resources. The case, they held, was further aggravated by the fact that it came at a time when Germany was definitely setting out with a policy of expansion, or *Weltpolitik*. It might be stated here, however, that the Socialists deprecate this movement, and that at the Socialist congress at Mainz on September 18 there was adopted unanimously a resolution condemning the "world policy" in general and that of Germany in particular, which it regarded as a "rapacious capitalistic and military movement, aiming at the establishment of a greater Germany."

Production and Industries.—Of the total area of Germany about 91 per cent. is regarded as productive. The division of this land has been reported in hectares as follows (the hectare equals 2.471 acres): Cultivable lands and vineyards, 26,375,791; woodlands, 13,956,827; grass lands, 8,788,806; lands otherwise classified, 4,927,201. The following figures show the number of hectares in Germany under the crops, and the production in metric tons (2204.6 pounds) in the years 1897-98 and 1898-99:

	1897-98.		1898-99.	
	Hectares.	Met. tons.	Hectares.	Met. tons.
Rye.....	5,966,778	6,932,506	5,945,191	7,532,708
Hay	5,911,968	21,211,585	5,915,475	21,971,628
Oats	3,999,063	4,841,446	3,996,521	5,780,699
Potatoes	3,067,732	29,801,062	3,080,586	31,791,653
Wheat	1,920,666	2,918,291	1,969,311	3,369,945
Barley	1,666,014	2,242,015	1,660,126	2,514,024
Fodder beets.....	465,523	10,614,349	471,344	10,502,808
Sugar beets.....	442,504	12,637,366	436,565	11,568,689
Buckwheat.....	146,411	96,769	140,889	99,487
Hops.....	89,525	23,961	88,740	21,997

In 1897-98, 117,042 hectares were under vines, the wine production being 2,775,576 hectolitres (the hectolitre equals 26.418 gallons); in 1898-99 there were 117,279 hectares and 1,406,818 hectolitres. About 25 per cent. of Germany's area is woodland; forestry is an industry of great importance, and from it the state derives a large annual revenue.

The mineral wealth of Germany is considerable. There are important mines of coal and iron in Rhenish Prussia, Westphalia, and Silesia, of zinc in Silesia, and of copper and silver in Harz. Coal and iron also occur in Lorraine, iron in Luxemburg, and coal, iron, and silver in Saxony. In general, during the last decade the mining industries have developed greatly. The following figures compare in amount and value the principal minerals taken out in 1889 and 1898:

	1889.		1898.	
	Metric tons.	Marks.	Metric tons.	Marks.
Coal.....	67,342,171	385,060,000	96,309,652	710,233,000
Brown coal.....	17,681,059	44,349,000	81,648,996	73,380,000
Iron ore.....	7,831,569	40,316,000	10,552,813	49,678,000
Copper ore.....	573,290	18,199,000	702,781	19,685,000
Lead ore.....	169,569	17,780,000	149,811	13,118,000
Zinc ore.....	708,829	17,690,000	641,706	22,047,000
Potassium salts.....	1,185,750	15,183,000	2,308,985	29,651,000
Silver ore and gold ore.....	22,264	4,042,000	14,702	1,883,000
Rock salt.....	544,591	2,255,000	807,792	3,399,000

The production and importation of iron in 1898 amounted to about 7,312,000 tons and 672,000 tons respectively; in 1899, 8,142,000 tons and 1,019,000 tons respectively. The exportation in 1898 was 2,325,000 tons and in 1899, 2,227,000 tons, leaving the amounts for home consumption in the two years 5,659,000 tons and 6,934,000 tons respectively.

During the last six or seven years German industries and commerce have shown a steady and rapid development. But in 1900 the American consul-general at Berlin reported that "in several branches of iron and steel manufacture the point of highest prosperity has been passed, production has overtaken the demands of both home and foreign trade, and, in the face of a falling metal market, conservative managers have begun . . . to shorten sail." He also stated that "in addition to the acknowledged overproduction in cement, iron tubing, and various other manufactured products, and the temporary stoppage in exports to China and the South African states, there is the fact that the wide and enormous expansion of industries and commerce has so absorbed German capital that there is now a serious stringency in the money market, which has helped to depress securities of all kinds and embarrass many manufacturers who operate independently of syndicates and combinations. It is well known that German banks finance industrial and commercial enterprises to an extent unknown in any other country; and it is estimated by the *Moniteur Industriel* that German investments of various kinds in foreign countries now amount to not less than 7,500,000,000 marks (\$1,785,000,000), distributed throughout Turkey, Africa, China, Mexico, South America, Canada, and the United States." The consul-general goes on to say: "Notwithstanding her progress and prosperity during the last thirty years, Germany is still poor in comparison with France and England, and her available capital is so wholly invested and actively employed that all share values—even the best—are kept by pressure of the money market inordinately low. Writers in other countries, especially England, have painted the situation in sombre colors, inveighed against the zeal of German banks in financing industrial and foreign enterprises, and predicted stormy weather for German metal industries in face of the increased cost of fuel and the overshadowing competition of the United States. While these general aspects of the situation are clearly recognized in Germany, there is no outward symptom of trepidation or panic, and business men of all classes face the future with apparent confidence."

The distribution of German capital, mentioned above as being invested in foreign countries, has been estimated as follows: United States, \$800,000,000; the Transvaal, \$170,000,000; Mexico, \$95,200,000; Central America, \$59,500,000 (another estimate is as high as \$67,000,000); the West Indies, \$59,500,000; the east coast of South America, \$142,800,000; the west coast, \$71,400,000; the north coast, \$47,600,000; Turkey, \$53,550,000 in industries and \$7,140,000 in real estate (these figures not including the Bagdad railway); East Africa, \$23,000,000, of which nearly \$1,200,000 are invested in Zanzibar; Cape Colony, nearly \$10,000,000; North Africa, nearly \$3,000,000; China, \$70,000,000; Japan, \$15,000,000; Australia and Oceania, \$150,000,000.

The laboring population of Germany is estimated to number about 8,800,000 males

and 2,100,000 females; according to the Bureau of Statistics the total number fifteen years ago was about 7,341,000. On the whole, there has been an increase in the nominal wage, yet the American consul at Stettin, writing in March, 1900, on the subject of German labor, made the following generalization: "American labor is paid treble the wages paid German labor in the same calling, and the cost of food is from 10 to 50 per cent. cheaper in the United States than in Germany."

Germany's Food Supply.—The meat-inspection bill, which is mentioned in a succeeding paragraph, revived the question of Germany's future food supply. What would be the result if war or some artificial prohibition should practically stop the importation of breadstuffs and meats? Many of the Agrarians hold that the conditions obtaining in former times, when the German states produced nearly their entire supply of bread and meat, might exist again if the large sums representing the profits of foreign exporters to Germany should be expended upon intensive methods of agriculture. They point out that during the past century, while the population of the territory constituting the present German Empire has nearly trebled—the approximate increase being from 20,000,000 to 56,000,000—the agricultural production of the same territory has nearly quadrupled. In the last ten years, by scientific culture and drainage, the rotation of crops, and the freedom from the destructiveness of local wars, the increased production of an acre has been 3 per cent. for barley, 10 per cent. for wheat, 19 per cent. for rye, and 25 per cent. for potatoes. The important questions are, How long can intensive cultivation keep pace with the increasing population? How long may such cultivation continue before the law of diminishing returns begin to operate? The Agrarians seem to be little troubled by these queries. But actual present conditions in no small degree weaken their argument based on the foregoing facts. For while production has become greater, a large and increasing amount of that production is being turned into commodities that can hardly be regarded as life-sustaining—nearly the entire barley crop is malted, and vast quantities of potatoes and corn are consumed in the manufacture of alcohol. Much of the best land of Germany, moreover, is planted to the sugar beet, the product of which is largely exported. Hence, notwithstanding improved farming processes and obstacles to food imports caused by Agrarian influence, imports to Germany in 1899, expressed in metric tons, included the following: Corn, 1,626,595; wheat, 1,370,850; barley, 1,104,349; rye, 561,251; oats, 259,147; potatoes, 214,139; fresh fruits, 143,730; pease, 58,872; pork, 47,961; buckwheat, 26,216; beans, 23,787; beef, 21,752; butter, 11,761; and large quantities of fish, dried fruits, and luxuries. Two conditions remain that present to the Agrarian arguments and propaganda objections more serious and more fundamental. The one is the present state of the German people, who by education and other progress have come to regard as necessities what were formerly luxuries; it is said that to-day they "demand and consume food products probably six or seven times more in market value than the plain fare of their 20,000,000 progenitors of a hundred years ago." The other condition lies in the fact that German activity—an activity that has enabled Germany to take a place among the great world Powers—has become predominantly industrial and commercial, whereas formerly it was predominantly agricultural. An attempt for Germany to produce her own food supply would mean the withdrawal of thousands of young men from the channels of business to the farm; and it is pointed out that, even could this end be compassed, no agricultural development could possibly be compensatory for the economic loss incurred. The Agrarian plan, besides, would probably necessitate largely the planting of the areas which now make possible the beet-sugar export to some other crop, thus curtailing a valuable branch of commerce; while the closing of Germany's doors to foreign foodstuffs would result in retaliatory tariffs that would be well-nigh fatal to German industry.

Commerce.—Of the world's trade, amounting to \$18,000,000,000, Germany's share is reported to be 10.8 per cent. German foreign trade has been built up largely at the expense of British. This condition has been brought about, in part, at least, by the following causes: German goods that were formerly bought at exceedingly low prices by English merchants, and then resold as English exports, are now shipped directly from the German manufacturer; German goods are often cheaper and sometimes better than the English; German merchants readily adapt their wares to the wants of their customers, and the German commercial representatives are said to have a superior technical knowledge of their business and a greater familiarity with foreign languages; and industrial commissions have been sent to South Africa, South America, Mexico, China, Japan, and other countries to inquire into the conditions and needs of the people.

Imports and exports, exclusive of the precious metals and specie, have been valued as follows:

	1897.	1898.	1899.
Imports.....	\$1,114,078,000	\$1,209,278,000	\$1,236,886,500
Exports.....	865,130,000	894,166,000	949,953,300

In 1899 the total imports amounted to \$1,376,503,500, and the total exports, \$1,039,681,300; in 1900 the total imports and exports amounted to \$1,388,328,200 and \$1,084,159,200 respectively.

The trade with countries of greatest commercial importance, as stated by the American consul-general at Berlin, was in 1899 as follows:

Imports from.	Exports to.	Imports from.	Exports to.
United States. \$215,913,600	\$ 89,868,800	France and Al-	
Great Britain. 184,949,800	202,680,800	geria	\$72,137,800 \$51,741,200
Austria - Hun-		Netherlands ..	48,385,400 77,992,600
gary	173,835,200 110,918,000	Italy	46,886,000 27,608,000
Russia	164,004,600 104,077,400	Argentina	46,291,000 12,447,400
Belgium	58,571,800 49,289,800	Switzerland ..	41,959,400 67,758,600

On account of home production there was in 1899 a marked decline in the importation of wheat and rye. Other important commodities have been imported as follows:

1898.	1899.	1898.	1899.
Wool	\$71,162,000 \$80,920,000	Machines, instru-	
Raw cotton....	59,738,000 55,692,000	ments, vehicles,	
Hard coal.....	31,654,000 33,558,000	etc.	\$14,518,000 \$18,088,000
Maize	29,988,000 31,654,000	Iron ore.....	13,090,000 15,470,000
		Pig iron	4,760,000 9,758,000

Important exports have been valued as follows:

1898.	1899.	1898.	1899.
Textiles	\$211,987,000 \$223,173,000	Leather and	
Drugs and col-		leather goods	35,224,000 38,794,000
ors	80,920,000 64,498,000	Grain and	
Hard coal....	49,028,000 49,266,000	other farm	
Sugar	\$50,456,000 \$45,695,000	produce	34,748,000 36,176,000
		Earthenware,	
		etc.	14,280,000 15,232,000

The export of textiles for 1899 showed an increase of \$11,186,000 over that of 1898. The decrease in the beet-sugar export is largely due to the lessened demand for the German article in the United States. In 1897 the United States received 376,286 tons of German sugar; in 1898, 219,516 tons; in 1899, 153,198 tons.

The value of wine and grapes imported in 1898 was \$13,639,542. In 1899, \$14,922,362. The value of the same commodities exported in 1898 was \$6,733,734; in 1899, \$6,606,404.

The following figures, which appeared in a United States consular report, show the amount in metric tons (2204.6 pounds) of nineteen leading staples forming the bulk of German imports from the United States:

ARTICLES.	1897.	1898.	1899.	Gain or loss in 1899.
	<i>Met. tons.</i>	<i>Met. tons.</i>	<i>Met. tons.</i>	<i>Met. tons.</i>
Raw cotton	225,273	235,068	256,066	+ 27,892
Raw tobacco and stems	10,726	10,961	13,056	+ 2,075
Hides and skins	6,881	6,280	3,688	- 2,551
Lumber and timber	207,286	271,298	324,585	+ 53,290
Meats (canned, etc.)	27,276	27,314	4,296	- 22,916
Barley	16,006	15,832	7,015	- 8,817
Oats	118,928	87,629	54,927	- 17,294
Corn	96,009	230,463	94,518	- 125,945
Wheat	976,084	1,261,685	1,246,507	- 14,822
Rye	207,261	528,021	710,317	+ 182,296
Petroleum, refined	142,997	249,912	70,494	- 178,418
Fork meats	837,659	674,242	881,112	+ 43,190
Fruits:	18,034	30,849	30,824	+ 9,775
Fresh	10,337	2,686	3,548	+ 862
Dried	17,850	13,275	12,117	- 1,158
Cotton-seed oil	15,548	23,320	16,827	- 8,491
Oil cake, etc.	159,483	200,642	278,610	+ 72,168
Bicycles	224	403	189	- 273
Copper, raw .....	.....	52,473	47,742	- 4,731

German trade with Asia—particularly with China and Japan—is increasing. Exports to Asia have been as follows: 1890, \$22,901,550; 1897, \$32,880,840; 1898, \$40,480,706. Imports from Asia: 1890, \$39,305,700; 1897, \$83,807,178; 1898, \$80,661,968.

In November, 1900, it was announced that the German Colonial Society had adopted a resolution urging that the new tariff include preferential rates for tea, coffee, cacao, spices, tobacco, and other products imported from the German colonies. It was pointed out that such a measure would be likely to provoke retaliatory tariffs on the part of countries receiving German exports; in particular, it was feared the measure might induce Great Britain to adopt a similar preferential tariff in behalf of her own colonies, which would place certain classes of German goods at a disadvantage in the British market.

Communications.—Only about 2900 miles of the German railways belong to private companies. The rest are owned by the imperial, or state, governments. On March 31, 1899, the railways completed and open for traffic in Germany aggregated 30,731 miles; on March 31, 1900, 31,307 miles. In 1897 the capital invested in railways amounted to 11,935,490,000 marks, and in that year the receipts were 1,684,730,000 marks, and the expenditure 957,674,000 marks. In February, 1900, there were 1274 miles of electric tramway in the empire.

At the beginning of 1898 the inland waterways navigable for vessels of a 3-foot 3-inch draught aggregated 7502 miles. This mileage was divided as follows: Navigable rivers, 4964 miles; canalized rivers, 1236 miles; canals, exclusive of the Kiel Canal, 1241 miles. The Kiel Canal, connecting the North Sea and the Baltic, was opened for traffic in June, 1895. Its length is 61 miles; breadth at the bottom, 72 feet; at the surface, 213 feet; depth, 29 feet 6 inches. The estimated cost of construction was about 156,000,000 marks. During the fiscal year 1899 there passed through the Kiel Canal 25,816 vessels, aggregating 3,117,838 tons; in 1900, 26,279 vessels of 3,488,765 tons. In the latter year about 65 per cent. of the shipping was under the German flag, 10 per cent. British, 8 per cent. Danish, 6 per cent. Swedish, and 3 per cent. Russian, Norwegian, or Dutch.

On June 16, 1900, the new Elbe and Trave Canal, which had been five years in building, at a cost of 24,500,000 marks, and connects the Baltic and North seas, was formally opened by Emperor William. The new canal has a length of 41 miles, an available breadth of 72 feet, and its 7 locks are 8 feet 2 inches deep. The passage of the canal requires from 18 to 21 hours. This waterway is of great importance to the states along the Elbe and to Norway, Sweden, Denmark, and Russia. Probably to some extent it will divert traffic from Hamburg, and it may somewhat reduce the revenue of the Kiel Canal.

The German postal and telegraph systems are controlled by the imperial government; exception, however, must be made in regard to the systems of Bavaria and Württemberg, where the posts and telegraphs are controlled by the governments of those states. The number of post-offices in the whole empire in 1898 was 35,462, and of telegraph offices 22,895. In the year 1898-99 the receipts from posts, telegraphs, and telephones in the empire amounted to 395,559,556 marks, and the expenditure 350,573,304 marks.

Religion and Education.—The principle of religious liberty prevails in Germany; most of the religious orders, however, particularly the order of the Jesuits, have been suppressed. In 1890 the number of Protestants was 31,026,810, or 62.8 per cent., of the population; Roman (and Greek) Catholics, 17,674,921, or 35.8 per cent.; Jews, 567,884, or 1.1 per cent.

Primary education for children between the ages of 6 and 14 is compulsory throughout Germany. Children of school age in 1890 numbered about 8,695,000. For secondary and higher education there are various high schools, gymnasia, etc., and technical schools and universities. The German educational system is, perhaps, the most thorough in the world.

HISTORY.

The Meat-Inspection Bill.—A bill introduced in the *Reichstag*, providing for the inspection of meat importations in the interest of the public health, was amended in committee in March, 1900, through the pressure of Agrarian influence, so that it severely restricted the importation of meat and provided for the almost absolute exclusion of such importation after 1904. The Agrarians argued that such a law must be enacted for the protection of German farm interests. The bill, however, met the disapproval of the manufacturing and commercial classes; the chambers of commerce in Hamburg, Frankfurt-on-Main, and other cities protested against the bill to the emperor and the *Reichstag*, pointing out its liability to cause the enactment of retaliatory tariffs in other countries. The government also disapproved the partisan nature of the bill as amended by the Agrarians, and it was said that Prince Hohenlohe, in case of its enactment, threatened to resign the chancellorship. Nevertheless, the bill passed its second reading on March 8 by a vote of 168 to 99. But in

the latter part of April the government effected a compromise with the supporters of the bill, which was finally enacted on May 23 by a vote of 163 to 123. The bill in its final form did not please the Agrarians, most of whom voted against it; the minority also included a number of Radicals and Socialists. The new law forbids the importation of canned meats and sausages, but provides that, with certain restrictions, fresh and prepared meat may be imported. The law will remain in force until December 31, 1903, or until it shall be superseded after that date by new legislation. The passage of the bill caused not a little excitement among the Western stock raisers of the United States; and on May 28 Mr. Bailey, a member of Congress from Kansas, introduced in the House of Representatives a bill, providing for the imposition of an additional 10-per-cent. duty on all German importations into the United States. The bill did not become law. The German authorities held that the meat-inspection law was a sanitary measure, and was not aimed at American trade, and pointed out that the law was applicable impartially to all nations. Since, however, the importations of American meat products to Germany are greater than those of all other countries combined, the United States will be the greatest sufferer.

The passage of the meat-inspection bill was feared in Hungary as well as in the United States; and not only because Hungarian meats would be excluded from the German market. For the Hungarians feared that a retaliatory tariff against German manufactures would be established in the United States, and that, in consequence, German products would to some extent be turned to Hungary, and that an undesired influence upon the latter's economic relations would result.

The Lex Heinze.—This measure, introduced in the *Reichstag* by the government, and supported by the Clericals and Conservatives, called forth as much disapproval among the literary and artistic classes of Germany as the meat-inspection bill did among the manufacturing and commercial classes. The original *Lex Heinze* was introduced in 1892 as a result of the revelations made during the trial of the notorious criminal Heinze, from whom the bill derives its name. The bill was intended to regulate public morality, and, in an amended form, provided penalties for the publication, sale, or exposure of books, pictures, and other works of art alleged to be offensive to decency. It also provided for the censorship of theatrical and other entertainments alleged to be of an objectionable character. In general, artists and literary men regarded the measure as a grave infringement upon the rights of their professions. Large mass-meetings were held in protest against the bill, which was also widely opposed by the public press. The measure met the strong opposition not only of those it most directly affected, but of many prominent officials and such notable scholars as Theodor Mommsen, the historian, and Friedrich Paulsen, the philosopher. In the *Reichstag* so great was the opposition of the Radicals and Socialists that they adopted obstructionist tactics, which theretofore had been almost unknown in that body. Finally, at the urgent request of Count Ballestrem, president of the *Reichstag*, the bill was dropped by the Clericals and Conservatives, who substituted a new measure, which, like the other, had the general purpose of regulating public morality, but which omitted the obnoxious clauses concerning police supervision of public entertainments and modified the clauses concerning the exposure and sale of objectionable books and pictures, so that they apply only to minors. In this form the bill was enacted on May 22.

The Naval Bill.—On December 11, 1899, Prince Hohenlohe, the imperial chancellor, announced in the *Reichstag* that a bill to amend the navy act of 1898 would be introduced. This bill, he said, would provide for an increase of the reserve and of the fleet in home waters and for the doubling of the number of battle-ships on foreign stations. The bill was brought in and was advocated by Count von Bülow, the minister for foreign affairs, "on the ground that recent political events, as well as the increase in naval armaments elsewhere, demanded a commensurate progress in behalf of German commercial and colonial enterprise." The measure was favored by the greater part of the Conservatives, moderate Radicals, and National Liberals. It was opposed by the Agrarians, Clericals, and Social Democrats, who argued that navy legislation should not be enacted before the expiration of the so-called "sexennate" of 1898 (the navy act mentioned above). On January 25, 1900, the *Bundesrath* approved the bill, which provided practically for the doubling of Germany's naval strength by 1916. The cost of such an increase would be 1,600,000,000 marks, of which 783,000,000 marks were to be obtained by the negotiation of a loan and the remainder from the usual revenues. In the *Reichstag* the bill was referred to the budget committee, which, upon a motion of the Clericals, decided to reduce by thirteen the number of cruisers proposed for the reserve and the foreign service. As the Clericals controlled the political balance, the fate of the naval bill was in their hands; and as a condition of their support they introduced certain measures providing for the partial payment of the increased expenditure to be incurred. These measures included "an increase in the tax upon negotiable paper, lottery tickets, imported malt and spirituous liquors and cigars, as well as a special tax on

mining shares." After the adoption of these measures by the *Reichstag* that body passed the naval bill on June 12, 1900, by a vote of 201 to 103. In its final form the bill provided that the navy should be enlarged so as to comprise two double squadrons, consisting of a flagship and 16 battle-ships and 8 great and 24 small cruisers; 3 great and 4 small cruisers as a reserve, and 3 great and 10 small cruisers on foreign stations.

The Clerical Toleration Bill.—In December, 1900, a bill was introduced in the *Reichstag* by the Clerical party, providing for complete freedom of worship throughout the empire of every religious body that is recognized by any one of the German governments. The bill provided for the abolition of all limitations placed by particular states on the dispensation of the sacrament and on other religious forms, and for freedom of religious societies or orders in the exercise of their functions, the last provision obviously repealing the law against the Jesuits. Count von Bülow, who had become imperial chancellor, in commenting on the bill before the *Reichstag*, said that while he favored equality in the treatment of religious bodies, such an end must be attained, if attained at all, by the action of the several state governments; and that, accordingly, he, as the representative of the federal government, would be obliged to oppose the measure. The bill, which was referred to a committee for further consideration, is significant of a strong feeling for complete religious liberty in Germany.

Taxation of Department Stores.—Considerable agitation was caused by a bill relating to the taxation of department stores, which was introduced in the Prussian Diet in January, 1900, and passed in July. According to the provisions of the bill, all department stores doing an annual business of over 400,000 marks are subject to a tax amounting to from 1½ to 2 per cent. of the capital invested. The object of this measure was, according to its supporters, not to raise additional revenue for the state, but to put the small middleman on a more equal footing in his struggle against the department stores, "to protect the weak against the strong." The measure was warmly supported by the Centrists, who profess a friendship for the small middleman, and vigorously opposed by the Radical and Liberal elements of the Diet.

Resignation of Prince Hohenlohe.—The resignation of the imperial chancellor, Prince Hohenlohe-Schillingsfürst (*q.v.*), on the ground of old age, was announced in October. There were reports that not only his advanced age led the chancellor to resign, but the fact that he disapproved of the emperor's policy in regard to China. But the *Cologne Gazette* stated that he was in entire accord with this policy. It appeared, however, that Prince Hohenlohe had not for some time given much attention to public affairs (although this was contradicted by certain German newspapers), and that as imperial chancellor he had seldom placed himself in opposition to the emperor, who since he threw off the guiding hand of Bismarck has been "his own chancellor." Prince Hohenlohe is a member of one of the great families that are represented by the smaller sovereigns of Germany; and, accordingly, he was higher in dignity than, though he was inferior in influence to, the late Count Caprivi, whom he succeeded as imperial chancellor in 1894. Among those mentioned in the press as possible selections for the chancellorship were Prince Hohenlohe-Langenburg, governor-general of Alsace-Lorraine; Count Philip Eulenburg, ambassador at Vienna; the Prince of Hatzfeldt-Trachenburg; and Count von Bülow, the minister for foreign affairs. A few days after Hohenlohe's resignation Von Bülow received the appointment to the chancellorship and also to the presidency of the Prussian ministry. He was succeeded as foreign minister by Baron von Richthofen, the under-secretary for foreign affairs. No question was raised as to Von Bülow's ability, but it was urged in some quarters that no one would be appointed who would not in all likelihood prove distinctly tractable to the emperor's wishes.

Other Events.—On June 20, 1900, Baron von Ketteler, the German minister at Peking, was murdered, and the attack on the legations in that city was begun by the Chinese. Soon after Germany, like the other Powers, prepared to send troops for service in China, and a mixed brigade of 10,000 men was mobilized for that purpose. Herr Mumm von Schwarzenstein was appointed to succeed Baron von Ketteler. With regard to the Chinese crisis Emperor William made a number of speeches, the vengeful tone of which aroused much unfavorable comment. At the same time the policy of the government was declared to be opposed to the partition of China. On August 8, 1900, Count von Waldersee, field-marshal in the German army, was appointed, with the consent of the Powers, commander-in-chief of the allied forces in China. An agreement in the interest of preserving the territorial integrity of China was concluded between Germany and Great Britain on October 16. On November 11, 1900, it was estimated that the cost of Germany's China expedition up to March 31, 1901, would be about \$37,169,000, the strength of the expedition being 582 officers and about 19,000 men. See the paragraphs on history in the article CHINESE EMPIRE.



COUNT VON BCLOW.



COUNT VON WALDERSEE.

On February 20, 1900, the *Reichstag* by a large majority adopted a resolution rescinding the so-called "dictatorial paragraph" in the law of 1879 relating to the administration of Alsace-Lorraine. The measure was strongly opposed by the imperial chancellor, whose position was supported by the Conservatives. On May 4 the coming of age of the crown prince of Prussia was celebrated in Berlin.

It was announced in October, 1900, that the Sultan of Turkey had leased to Germany for a coaling station for a period of thirty years the island of Uroan in the Red Sea, forty miles north of the island of Kamaran. Though later the report was officially denied, it seemed to contain a germ of truth, as early in December Turkey protested against German occupation of the island.

Matters relating to Germany are also treated in the articles *ARCHÆOLOGY*, *CENSUS*, *COLONIES*, and *GERMAN LITERATURE*.

GIBIER, Dr. PAUL, the founder and director of the New York Pasteur Institute, died at Suffern, N. Y., June 9, 1900. He was born in Paris in 1851, and graduated from the University of Paris in 1884. He was for some time an assistant in the Pasteur institute in Paris. His first work of public interest was the study of cholera and of Ferrar's preventive inoculation in Spain, and in 1888 the French government sent him to Havana to make a study of yellow fever. A small hospital built in New York for the preventive treatment of rabies became a large sanitarium. A few years ago he moved the institution to Suffern.

GIBRALTAR, a British crown colony in the Spanish province of Andalusia, commanding the entrance to the Mediterranean, has an area of only 1.9 square miles, but a maximum elevation of 1439 feet above the Straits. The total population in 1898 was 24,093; 1899, 24,701, of whom 5653 were British troops. Gibraltar is notable not only as a naval base but as a position of extraordinary strategic importance. The commander of the troops, General Sir Robert Biddulph since 1898, is also governor of the colony and exercises both executive and legislative functions. Revenue and expenditure in 1898 were £56,019 and £48,878 respectively, and in 1899, £59,954 and £59,520 respectively. The revenue is chiefly derived from port dues, rent of crown estate, and excise. The public debt amounts to £30,000. The shipping is about three-fourths British; the total tonnage in 1898, exclusive of war vessels, was 4,560,000 tons, and in 1899, 4,299,000 tons. In the latter year British tonnage was the smallest it had been in many years, and foreign tonnage the largest. The principal trade is the supply of coal and stores to shipping. Public works recently in process of construction included new reservoirs for the storage of rain water, new drainage, and a new commercial and coaling mole.

GIBSON, CHARLES HOPPER, former United States senator from Maryland, died at Washington, D.C., March 31, 1900. He was born in Queen Anne County, January 19, 1842, was admitted to the bar in 1864, and from 1870 to 1879 was State's attorney for Talbot County. From 1885 to 1891 he was a Democratic member of Congress, and in January, 1892, was elected to fill an unexpired term in the United States Senate, caused by the death of E. K. Wilson. This term expired in March, 1897.

GILBERT, MAHLON NORRIS, D.D., LL.D., coadjutor bishop of the Protestant Episcopal Church for the diocese of Minnesota, died in St. Paul, Minn., March 2, 1900. He was born at Laurens, N. Y., March 23, 1848, and was educated at Hobart College, where, however, he did not complete his course. After teaching for a time in Utah, and studying at the Seabury Divinity School, Faribault, Minn., he was ordained to the priesthood in 1875. He was in charge of several parishes in the West, and in October, 1886, was consecrated coadjutor bishop of Minnesota.

GILDER, Colonel WILLIAM HENRY, Arctic explorer, died at Morristown, N. J., February 6, 1900. He was born in Philadelphia in 1838, and at the outbreak of the Civil War enlisted as a private in the Union army. Serving with the Army of the Potomac, he was promoted, and for some time was on the staff of General T. W. Egan. After the war he turned his attention to art and later to journalism, becoming managing editor of the *Newark Register*, of which his brother, Richard Watson Gilder, was the founder. He became interested in Arctic exploration, and in 1878 accompanied the Franklin search expedition as second in command to the late Lieutenant Frederick Schwatka. On this expedition he experienced much hard sledging service in King William's land, travelling, it is said, some 3250 miles, perhaps the longest Arctic sledge journey on record. He accompanied the De Long expedition in 1881 in the *Rodgers*, which ship was burned on the western shore of Bering Strait. He then went on the *Lena Delta* with the search party for the survivors of the *Jeannette*. Later, he acted as a foreign correspondent of the *New York Herald*. He wrote *Schwatka's Search and Ice Pack and Tundra*.

GILL, Sir DAVID, astronomer and director of the Cape of Good Hope Observatory, received the year several well-merited honors in recognition of his researches. In addition to being knighted on the occasion of Queen Victoria's birthday, Dr. Gill

received from the United States the Watson medal of the National Academy of Sciences and the Bruce medal from the Astronomical Society of the Pacific. The Watson medal was given for Dr. Gill's work in perfecting the application of the heliometer to astronomical measurements, resulting in the determination of the parallaxes of the sun and stars, and of the positions of the planets. Sir David Gill is now engaged in supervising the measurement of a meridian arc across Africa from the Cape of Good Hope to Cairo. He was born June 12, 1843, at Aberdeen, Scotland, and his first work in practical astronomy was done at the observatory in that town. In 1872 he became director of the observatory erected at Dunecht, near Aberdeen, by Lord Lindsay. In 1874 he went to Mauritius to determine the solar parallax of the sun by means of heliometer measurements, and in 1877 at the island of Ascension he measured the parallax of Mars. He became director of the Cape of Good Hope Observatory in 1879, a position which he now holds. Dr. Gill in the course of his work at this observatory has made a number of important observations and has published many valuable papers. With Dr. Elkin he determined the parallax of the southern stars, and he also arranged a series of telegraphic determinations of longitude. In 1882, at the time of the transit of Venus, he organized the South African station, and in the following year he commenced a geodetic survey of South Africa, which has since been extended. From 1885 to 1890 he made a series of photographs of the southern heavens, including all the stars between 20° and the South Pole. A new heliometer having been constructed for the Cape observatory in 1887, he again determined the solar parallax with a high degree of precision. This was done by means of observations at a number of stations in accordance with a carefully prepared plan. The numerous researches of this astronomer are to be found in the publications of the Dunecht and Cape of Good Hope observatories and in the proceedings of the Royal Astronomical Society, of which, as well as many other learned bodies, Dr. Gill is a member.

GIRLS' FRIENDLY SOCIETY IN AMERICA, founded in England in 1875, has extended to all English-speaking countries, and numbering in 1900 in all parts of the world over 300,000 members, is a society of young church women and girls, which aims to encourage purity, dutifulness to parents, faithfulness to employers, and thrift. There are two classes of members—associates, who must be communicants of the Protestant Episcopal Church, and members, who may be of any denomination. The society was started in the United States in 1877, and had in 1900 a membership of nearly 22,000. The American society publishes the *Girls' Friendly Magazine*. President, Mrs. Thomas Roberts, Philadelphia, Penn.; secretary, Miss Eve Alexander, 659 West Lexington Street, Baltimore, Md. Central office, 281 Fourth Avenue, New York City.

GLADSTONE, Mrs. WILLIAM EWART, eldest daughter of Sir Stephen Glynne, of Hawarden Castle, was born in 1812 and died June 14, 1900. Mrs. Gladstone was known throughout England for her unwearied devotion to her husband's interests, for her social grace, and for the extraordinary loveliness of her character. Mrs. Gladstone was much interested in religious and charitable work, an instance of the latter being her collection of \$25,000 for the orphans who were victims of the cholera epidemic. At Hawarden also Mrs. Gladstone gave her personal supervision to an orphanage in which young girls were trained for domestic service. By courtesy of the Dean of Westminster, and in accordance with Mr. Gladstone's expressed wish, Mrs. Gladstone was laid by her husband's side in Westminster Abbey.

GOEBEL, WILLIAM, who as a Democrat contested the gubernatorial election in Kentucky in the fall of 1899, was shot in Frankfort on January 30, 1900, while walking in the capitol grounds on his way to the State House, and died on February 3. The shot was fired from a rifle by some unknown person stationed at a window in the State House. According to the election returns, the Republican candidate for governor, W. S. Taylor, was elected, and accordingly he took the oath of office. After the organization of the Legislature, January 1, 1900, notice of contest, based on several grounds, including the use of tissue ballots in the election, illegal injunctions, military interference, and intimidation, was served on the *de facto* government, and the matter was referred to a legislative committee, which when Goebel was shot was prepared to report to the Legislature in his favor. Accordingly, on January 31 Goebel and J. C. W. Beckham took the oath of office as governor and lieutenant-governor respectively. The decision of the commission was subsequently endorsed by the courts. See KENTUCKY (paragraph The Goebel Feud).

William Goebel was born in Sullivan County, Penn., in 1856, and when a boy went with his parents to Covington, Ky. He studied law and became the partner of Governor John W. Stevenson and later of John G. Carlisle. For about twelve years preceding his death he represented Kenton County in the Kentucky Senate.

GOLD. The production of gold in the United States, as well as throughout the rest of the world, during 1900 was quite large, although in comparing the world's production

of 1900 with that of 1899 there is found an apparent decrease of about \$57,000,000, which is at once explained when we recollect that, owing to the war in South Africa, the great output of the Transvaal mines has practically been completely stopped for the time being. The production from this republic was expected to reach \$100,000,000 in 1900, but instead it amounted to but \$6,845,046. Making an allowance, therefore, for the Transvaal output, in comparing the world's production of gold in 1900 and 1899, we find that during the past year there was really an increase of nearly \$9,000,000.

The following figures of production are given by the *Engineering and Mining Journal*:

GOLD PRODUCTION OF THE WORLD.

	1899.		1900.	
	Fine Ounces.	Value.	Fine Ounces.	Value.
<i>North America.</i>				
United States	3,391,196	\$70,096,021	3,805,455	\$78,658,755
Canada	1,018,371	21,049,730	1,257,862	26,000,000
Newfoundland	8,960	81,646	3,960	81,646
Mexico	448,832	9,277,851	404,749	8,366,163
Central America	23,470	486,158	31,446	650,000
<i>South America.</i>				
Argentina	6,773	140,000	6,773	140,000
Bolivia	15,723	325,000	15,723	325,000
Brazil	78,613	1,583,700	77,407	1,600,000
Chile	54,657	1,129,820	60,474	1,250,000
Colombia	104,490	3,400,000	135,462	2,900,000
Ecuador	3,628	75,000	5,806	120,000
Guiana (British)	108,369	2,238,040	102,901	2,126,964
Dutch Guiana	26,972	557,532	25,239	521,690
Guiana (French)	80,073	1,655,088	68,353	1,412,857
Peru	86,045	724,414	38,581	797,520
Uruguay	2,573	53,168	2,573	53,168
Venezuela	46,619	963,670	46,619	963,670
<i>Europe.</i>				
Austria	2,411	49,845	2,411	49,845
Hungary	98,798	2,042,159	98,798	2,042,159
France	6,047	125,000	6,047	125,000
Germany	3,601	74,425	3,601	74,425
Italy	3,643	75,299	3,643	75,299
Norway	74	1,539	74	1,539
Portugal	96	1,994	96	1,994
Russia	1,119,314	23,968,017	1,117,130	23,090,863
Spain	1,929	39,873	1,929	39,873
Sweden	3,415	70,581	2,415	70,581
Turkey	876	7,751	875	7,751
United Kingdom	2,845	58,810	2,845	58,810
<i>Asia.</i>				
China	321,510	6,645,612	266,086	5,500,000
India (British)	405,683	8,395,467	453,275	9,369,185
Japan	58,065	1,200,000	60,474	1,250,000
Korea	55,433	1,145,769	63,968	1,300,000
Malay Peninsula	25,399	524,997	25,399	524,997
Dutch East India	12,369	255,667	20,369	421,027
<i>Africa.</i>				
Transvaal	3,539,836	72,961,501	331,158	6,845,046
Rhodesia	54,241	1,121,170	78,065	1,613,388
West Coast	33,665	700,000	36,281	750,000
Madagascar	7,257	150,000	24,190	500,000
Australasia (7 colonies)	3,807,727	78,705,710	3,642,149	75,283,215
Other countries	72,530	1,500,000	77,407	1,600,000
Totals	15,173,683	\$313,641,534	12,406,554	\$256,462,438

In 1899 the United States ranked third on the list of gold-producing countries; but in 1900, owing to the stoppage of mining in the Transvaal, it advanced to first place, while Australasia dropped back to second place, Canada being third and Russia fourth. The production of these four countries together forms nearly 90 per cent. of the world's output. The world's production in 1897 amounted to \$237,833,984; in 1898, \$286,803,462; and in 1899, \$313,641,534. Of the last amount, 86.5 per cent. was produced by five countries, as follows: Australia, \$70,206,180; South African Republic, \$72,961,501; United States, including Alaska, \$70,096,021; Russia, \$23,963,017; Canada, \$21,049,730.

Statistics have been published showing that the world's production for the fifty years ending with 1899 amounted to \$6,596,832,000, and for the preceding fifty years

\$787,460,000. The world's production in the second half of the century is also reported to be more than double that produced from the time of the discovery of America to 1850, which output is estimated at \$3,129,720,000.

According to estimates made by the director of the United States Mint, the world's production has been as follows:

1501-1550.....	\$225,580,000	1701-1750.....	\$587,580,000
1551-1600.....	245,580,000	1751-1800.....	677,240,000
1601-1650.....	281,840,000	1801-1850.....	787,460,000
1651-1700.....	324,440,000	1851-1899.....	6,665,631,000

The estimated production for the last four years reported has been:

Year.	United States Total.	World's Total.
1896.....	\$53,088,000	\$202,251,000
1897.....	57,363,000	238,812,000
1898.....	64,463,000	287,428,000
1899.....	72,500,000	315,000,000
Total.....	\$247,414,000	\$1,043,491,000

The United States production for 1899 was 3,437,210 troy ounces, valued at \$71,053,400. The value for 1900 as given by the *Engineering and Mining Journal* is \$78,658,755, a substantial increase over the previous year, which is in part due to the increased production of Colorado, the leading State at present in gold mining. California ranks second and Alaska third, the much-advertised Cape Nome fields having failed to come up to anticipations. Other important gold-producing States for the year were Montana, Idaho, Washington, Oregon, Arizona, and New Mexico.

Realizing the importance of reliable information concerning the gold fields of Alaska, which have been exciting so much attention, the United States Geological Survey has had parties in the field for several years past, and the results of their investigations have appeared in the form of two reports during 1900. The first of these is Part VII. of the twentieth annual report, and contains sketches of the economic geology of the Alaskan gold-producing districts, as well as important notes on the climates, routes by which the districts may be reached, etc. There are also many maps and illustrations in the report. A second volume, smaller in size, is entitled a *Preliminary Report on the Cape Nome Gold Region*, by Brooks and Schrader, and gives an accurate description of this district. The report states that the bed-rock of the Nome district is limestone, mica schist, and gneiss, while the gravels of the region can be classified as gulch, terrace, and tundra gravels, those of the beaches being closely related to the latter. The most important gold deposits thus far exploited are in the gulch and beach gravels, although the metal is also known to occur in the tundra and in the bars of the larger rivers; but it is suggested that prospectors would do well to investigate the higher beaches and terraces. The occurrences of gold in beach sands are known to occur at several localities in the United States, but those at Cape Nome are peculiarly rich; and it is expected that the gold production for that region in 1899 will probably amount to about \$3,000,000. The Geological Survey of the Dominion of Canada has issued a report by R. G. McConnell on the Klondike gold fields of the Yukon district. As is well known, the early Klondike strikes were made on the Canadian side, but the richer claims are on the American side of the line.

The amount of gold coined during the year 1900 is reported by the Bureau of the Mint as follows:

Denominations.	Pieces.	Value.
Double eagles.....	4,334,084	\$86,681,680.00
Eagles.....	374,960	3,749,600.00
Half eagles.....	1,734,730	8,673,650.00
Quarter eagles.....	67,205	168,012.50
Total gold.....	6,510,979	\$99,272,942.50

The imports of gold during the year amounted to \$66,745,244, \$21,041,988 of which was in the form of ore and base bullion, while \$45,703,256 was either coin or bullion. The exports amounted to \$54,134,623, divided as follows: Domestic, ore and base bullion, \$69,926; bullion and coin, \$52,717,597; foreign bullion and coin, \$1,347,100.

GOLD COAST, one of the four West African crown colonies of Great Britain, the others being Gambia, Lagos, and Sierra Leone. The Gold Coast lies between Togoland (German) on the east and the Ivory Coast (French) on the west, hav-

ing a coast line on the Gulf of Guinea of about 350 miles. Ashantiland and other territories lie to the north of the colony proper, and were formed into a separate district under the name of the "Northern Territories" in 1896; this district is administered by a commissioner at Kumassi. To the north of the Northern Territories is the French Soudan. The estimated area of the Gold Coast proper is 40,000 square miles; the population has been estimated at 1,473,882, of whom only about 500 are Europeans. The seat of government is Accra, a town with an estimated population of 16,276; the other most important towns are Cape Coast (population, 11,614), Elmina (10,530), Addah (7530), Kwitta, Saltpond, and Winneba. The Gold Coast is administered by a governor (Sir F. M. Hodgson since 1898), who is assisted by an executive and a legislative council. Educational work is being carried on by Methodist, Roman Catholic, and other missionaries, some of whom receive government aid. The government has established elementary schools at Accra and Cape Coast. The revenue (including grants) of the colony in 1898 was £303,822, and the expenditure, £377,972; the revenue and expenditure in 1899 were £422,795 and £309,658 respectively. The principal products are palm oil, palm kernels, rubber, ivory, and gum-copal; gold is found in considerable quantities. The trade is chiefly with Great Britain. In 1898 the total imports amounted to £960,336, and in 1899, £1,323,218; for the same years the exports amounted to £992,998 and £1,111,738 respectively. In 1899 the values of the leading exports were: Rubber, £555,731; palm oil, £183,204; palm kernels, £106,156; timber, £87,076. The chief imports are textiles, hardware, and alcoholic liquors.

A government railway is being built from Sekondi on the coast to Tarkwa, and some 50 miles have been constructed. Under the Colonial Loans act of 1899 the imperial government advanced the sum of £578,000 for railway construction and £98,000 for harbor works at Accra. Late in 1900 it was definitely announced that work was to be begun immediately on the extension of the Sekondi-Tarkwa Railway to Kumassi. The entire road, which has a 3 ft. 6 in. gauge, when completed will be 180 miles long. It will pass through a gold-bearing country and dense tropical forests. In a district so liable to native uprisings as Ashanti—the year 1900 witnessed the fifth insurrection—this railway will insure considerable safety to British administration, as it will enable troops to reach Kumassi from England in fourteen days. Over 700 miles of telegraphs have been constructed in the colony.

In March, 1900, an insurrection of the natives occurred in Ashantiland. It was caused by a British expedition in quest of the "golden stool," the symbol of Ashanti royalty that was carried off by the natives upon the downfall of Prempeh in 1896, and the existence of which the natives consider necessary for the enthronement of a king. It may be remembered that Prempeh, king of Ashanti, submitted to British troops at Kumassi in January, 1896, whereupon Ashantiland and the adjacent territories were placed under British protection and a commissioner was placed at Kumassi, as noted above. Failing to comply with the terms dictated by the British, Prempeh was made a political prisoner, and is now interned on one of the Seychelles. Early in April, 1900, Kumassi was invested by a large force of natives, and on the 9th of the month a small relieving force of Hausas was sent from Accra. At Kumassi were Governor and Lady Hodgson. There were no white troops, but the town was garrisoned by 700 native soldiers under Major A. H. Morris, who had four Maxim guns and six seven-pounders. The Kumassis, the strongest tribe in Ashantiland, who were armed with flint-lock muskets, seemed to be the leaders in the insurrection. The king of the Bekwais, living only a few miles from Kumassi, appeared to be loyal to the British. On April 25 a great number of natives, possibly 10,000, attacked the fort at Kumassi; another attack was made four days later, when the rebels were driven off with great loss. A force of Lagos constabulary, marching to the relief of Kumassi, reached the town on April 29; on that day and on the 30th it experienced severe fighting, and sustained a loss of 2 killed and 133 wounded. Other reinforcements were sent from the West African Frontier Force in Nigeria and the Sierra Leone West African Regiment and Frontier Police. The uprising continued to grow in seriousness and the disaffection of supposedly loyal tribes, including the Bekwais, was feared. The rebels were believed to be able to raise 50,000 men, and it was thought that for some time they had been making extensive preparations for the insurrection. On June 23, 1900, Governor Hodgson with 600 native soldiers, commanded by Major Morris, being forced by reduced rations to leave Kumassi, pushed through the rebel lines, and by way of Patiasa reached Terrabum with a loss of 6 killed and several wounded. The march was attended by much suffering and privation. Captain F. E. Bishop and 100 Hausas were left in Kumassi to assist the troops then on their way to take the city. The governor and his party reached Accra on July 11.

On July 15 the reinforcements commanded by Colonel James Willcocks and Colonel Burroughs succeeded in relieving the garrison at Kumassi after two days of hard fighting. The garrison was found to be so exhausted that it could have

held out but little longer. Many persons in Kumassi had died of starvation. The rebel camp at Kokofu was destroyed on July 22, and other expeditions were sent out to make complete the suppression of the uprising. It was necessary, however, to move again upon Kumassi, and it was not until the close of the year that the insurrection was entirely put down. On November 14 Chief Kobina Cherry, a ring-leader of the rebellion, was surprised and captured near Onumassi, and by the last of December all the rebel chiefs had surrendered, the chiefs Kofi Kofia and Osei Kudjoe Krum being the last captured.

GOLF. The old Scottish national game was established in this country only a dozen years ago by the St. Andrews Golf Club, near Yonkers, N. Y., when the name "golf" was practically unknown here. Up to 1894, at the close of which year the United States Golf Association was formed, the game had but a slow growth, and there were at that time, according to an authority, less than a dozen clubs. All the growth of the game has practically been since then, yet a recent estimate claims for the game in America in 1900 over 1200 organized golf clubs, with a membership of 200,000, 50,000 of them being women. This takes no account of thousands of players unaffiliated with clubs. The year 1900 saw a great increase of clubs and of private links, and an increasing number of public links in the city parks. In relation to the improvement in the standard of play, it is of interest to note that in 1900 the winner of the national amateur championship was, for the second successive year, a native born-and-bred golfer. Both in 1899 and 1900 the winners of the championship had, in the finals, played former champion Findlay S. Douglas, an ex-captain of the St. Andrews University team. Probably the greatest events of interest during the year were the visits to this country of two of the best of the British golf players—Harry Vardon, open champion of Great Britain in 1896, 1898, and 1899, and later J. H. Taylor, open champion in 1894, 1895, and 1900. It would be impossible even to summarize here the results of the tours of these two golfers. Playing from day to day on strange courses and sometimes under adverse conditions, they were, in general, invincible. Their comments on the characteristics of leading American players and on the conditions of the various links were widely published, and excited much interest. In golf an amateur does not lose his standing by playing with professionals whose play is fully up to the standard in the matter of the spirit of clean sport, and many amateur golfers improved the opportunity of bettering their quality of play in contests with the two open champions. The year saw a number of metropolitan women's associations formed, a natural sequence to the large number of sectional organizations formed by the men players during 1899. The three principal tournaments of the year—the national amateur, women's, and open championships—were played as usual. The fourth important event, the intercollegiate championship, was not held, owing to the decision of the Intercollegiate Golf Association in 1899 to change the time of playing from fall to spring. It was felt that to hold a match in the spring of 1900 would bring the event inconveniently near the 1899 affair, and the fifth annual tournament will, therefore, be held in the spring of 1901. Yale, Princeton, and Columbia, however, played an unofficial match in May, which was won by Yale. The record of the national matches of 1900 follows. The sixth annual amateur championship of the U. S. Golf Association was held at Garden City Golf Club, Long Island, N. Y., July 2-7, 96 players starting and 36 qualifying, 36 holes each day. The players in the semi-final round were W. J. Travis, Garden City Golf Club; A. G. Lockwood, Allston; F. S. Douglas, Fairfield County; and H. M. Harriman (champion), Meadowbrook. Lockwood and Harriman dropped out, and Travis defeated Douglas 2 up. The finals were played in an unusually violent thunderstorm. The fifth annual women's championship, Shinnecock Hills Golf Club, Long Island, August 28 to September 1, had 58 starters, 16 qualifying, 18 holes each day. In the semi-final round the players were Miss Frances C. Griscom, Merion Cricket Club; Miss Eunice Terry, Ardsley; Miss Margaret Curtis, Essex County; and Miss Beatrix Hoyt, Shinnecock Hills. Miss Terry and Miss Hoyt dropped out, and Miss Griscom won over Miss Curtis 5 to 4. Miss Genevieve Hecker, of the Wee Burn Club, was a new player of promise, who gave way, however, before Miss Terry. At a previous tournament she had defeated Miss Hoyt and Miss Underhill, the champion of 1899. The latter was defeated at the 1900 tournament by Mrs. Rogers, of the Hillside Club, who was beaten by Miss Griscom, who took the championship. Miss Louise D. Maxwell, Nassau County Club, won the long drive with 189 feet 5 inches, a record for the championship contests. The sixth annual open championship was held at the Chicago Golf Club October 4-5. 54 professionals and 6 amateurs starting, 72 holes at medal play. Harry Vardon won with a total of 313 strokes; second, H. J. Taylor, 315. As Taylor had just beaten Vardon for the English open championship, the meeting of the two was the event of the tournament.

In England the amateur championship was won by H. H. Hilton, of the Royal Liverpool Club, from a representative array of players. The ladies' championship

was won by Miss Rhona Adair, the Irish lady champion. F. G. Tait, the amateur champion in 1896 and 1898, was killed during the year in the South African War.

GOOD TEMPLARS, INDEPENDENT ORDER OF, originated in central New York in 1851, and in 1859 adopted a platform declaring for total abstinence, no license, and absolute prohibition. The International Supreme Lodge held its thirty-ninth session in Toronto, Canada, June 27-July 4, 1899. The reports showed that there were 81 grand lodges and 37 subordinate lodges in the world, with a membership of 403,287, besides a juvenile branch membership of 172,839. R. W. G. Templar, Joseph Malins, Birmingham, England; R. W. G. secretary, B. F. Parker, Milwaukee, Wis. The order is growing rapidly in Scandinavian countries, Germany, and Switzerland. The next session will be at Stockholm, Sweden, beginning on the second Tuesday in July, 1902.

GOSS, Rev. Dr. CHARLES FREDERICK, Presbyterian clergyman, whose novel, *The Redemption of David Corson*, was one of the successful books of the year, was born at Meridian, N. Y., June 14, 1852. He graduated from Hamilton College in 1873, and from the Auburn Theological Seminary three years later. He was for many years engaged in home missionary work, and since 1885 has held pastorates at Chicago and Cincinnati. He is at present the professor of biblical literature at Cincinnati University. His previous writings include *The Optimist* and *The Philopolist*, but his new novel is his first publication of importance. It is a strong story of the fall and redemption of an imaginative youth.

GOUGH, Colonel GEORGE HUGH, C. B., assistant adjutant-general with the English cavalry in the Anglo-Boer War, died at Norval's Pont, South Africa, March 29, 1900. Born in County Tipperary, July 25, 1852, he was educated at Eton and at Trinity College, Cambridge, and in 1871 he entered the army. His first active service was in the campaign in Natal against the Boers in 1881, when he was an aide to Major-General Sir T. Baker. The next year he served as an aide to Lieutenant-General Sir E. Hamley in the Egyptian expedition and took part in the battle of Tel-el-Kebir. He accompanied the Soudan expedition of 1884-85, being wounded at Abu Klea, and was honored for meritorious services. In 1897 he was appointed private secretary to the British commander-in-chief.

GRAND ARMY OF THE REPUBLIC. First organized in 1866, the first national encampment having been held in November of that year. In June, 1899, there were 6905 Grand Army posts, and 287,981 members distributed in 45 departments. National encampment for 1901 to be held at Cleveland, O. Commander-in-chief, Leo Rassient, St. Louis, Mo.

GRANGE, NATIONAL, PATRONS OF HUSBANDRY, a recent farmers' association, admitting both sexes, and composed of subordinate, county, and State organizations. Its ritual embraces seven degrees. About 30,000 subordinate granges have been established in 44 States and Territories. Its position in reference to legislative matters, as proclaimed at the annual meeting at Washington, D. C., in November, 1900, is as follows: Rural free mail delivery, postal savings banks, election of senators, by popular vote, constitutional amendment for the national control of corporations, enlargement of the powers of the Interstate Commerce Commission, regulation of the use of shoddy, food laws, extension of market for farm products, enactment of anti-trust law, speedy construction of Nicaragua Canal, shipcanal from the Mississippi to the ocean, revision of federal fees and salaries, protection of dairy interests, no ship subsidies. Master, Aaron Jones; secretary, John Trimble, Washington, D. C.; business office, 514 F Street, Washington, D. C.

GRANT, ROBERT, published in 1900 *Unleavened Bread*, a keen satire upon the superficiality and hypocrisy of much of American social life. Robert Grant was born at Boston, Mass., in 1852, graduated from Harvard in 1873, and from its law school in 1879. While practising law at Boston he has held various municipal positions, and at present is judge of probate and insolvency for the County of Suffolk. His first literary work was a burlesque on Greek tragedy, *The Little Tin God on Wheels*, published in the *Harvard Lampoon*. *The Confessions of a Frivolous Girl* followed in 1880. Among his writings of later years are: *The Lambs* (1882); *An Average Man* (1883); *The King's Men* (1884); *The Knave of Hearts* (1885); *A Romantic Young Lady* (1886); *Face to Face* (1886); *Jack Hale* (1887); *Jack in the Bush* (1888); *The Reflections of a Married Man* (1892); *The Opinions of a Philosopher* (1893); *The Art of Living*; *The Bachelor's Christmas* (1895); and *Searchlight Letters* (1899). Much of Judge Grant's earlier work has the character of rollicking burlesque, but of late years he has been mainly interested in American social life. *Unleavened Bread* pictures a pretentious and unlovely woman, somewhat in the Becky Sharp type, but without sufficient introspection or education ever to get a glimmering of her own hypocrisy. She cheerfully deserts or buries two of her husbands who fail to aid her up the social ladder; cleaves to those people who hold

that her birth as an American entitles her without breeding and without training to honor, place, and deference; and by crass insistency and an utter blindness to her innate vulgarity, places herself in the United States Senate, where she rules through her third and only entirely amenable husband.

GRAPHITE. The production of graphite in the United States in 1899 amounted to 2,900,782 pounds of refined crystalline graphite, and 2324 short tons of amorphous graphite, having a total value of \$167,106, an increase of nearly 50 per cent. in value over 1898.

Most of the crystalline graphite came from Ticonderoga, N. Y., while smaller amounts were produced in Chester County, Penn., and Clay County, Ala. The amorphous graphite came from Rhode Island and Baraga County, Mich. The imports of manufactured and crude graphite had a value of \$1,990,649.

Artificial graphite is a product made by the Carborundum Company, of Niagara Falls, and is obtained by subjecting the usual forms of carbon to the highest temperatures obtainable in the electric furnace, even higher than those used in the manufacture of carborundum. By such treatment the carbon is converted chiefly into graphite. Siliceous impurities affect the change somewhat.

In 1899 the Acheson Graphite Company, of Niagara Falls, produced 405,870 pounds of graphitized carbons, which were to be used in the shape of anodes and electrodes for alkali manufacture and self-lubricating motor brushes. A more recent product is powdered and flake graphite.

GRASSI, GIOVANNI BATTISTA, professor of comparative anatomy in the University of Rome, during the summer was successful in practically testing his theory that the mosquito is responsible for the spread of malaria. Professor Grassi was born at Rovelasca, near Como, in 1856, and studied medicine at the University of Pavia and subsequently in Germany, working at Heidelberg under Professor Gegenbaur. In 1885 he was called to the University of Catania as professor of zoology and comparative anatomy, and soon after was appointed professor in the University of Rome. In an investigation carried on with Professors Bignami and Bastianelli, he had previously discovered that malaria was caused by a mosquito of the *Anopheles* species. This insect introduced into the blood of the person bitten a parasite which developed and produced the disease. Professor Grassi during the summer protected by means of nets and screens a number of railway employees in an extremely unhealthy district. Of the 104 persons so protected from the bites of mosquitoes, but 5 acquired the fever, which prevailed in the vicinity with unusual severity. See ENTOMOLOGY (paragraph Insects and Disease).

GRAY, LONDON CARTER, a prominent specialist in nervous and mental diseases, died at his home in New York May 8, 1900. He was born in that city in April, 1850, was educated at Columbia College and the University of Heidelberg, and in 1873 received his degree in medicine from the Bellevue Hospital Medical School, New York. He then became a pupil and assistant of Dr. James R. Wood. His practice in New York and Brooklyn was gradually restricted to neurotic diseases, on which he became a high authority. He was made consulting physician to St. Mary's Hospital, and professor of neurology in the Long Island College Hospital. He aided in founding the New York Polyclinic, the first graduate school in America for physicians only, and there assumed the chair of nervous and mental diseases. At different times he was president of the Society of Medical Jurisprudence, the New York Neurological Society, the New York County Medical Society, and the American Neurological Association. He made many contributions to medical literature, among which are: *Neurasthenia*; *The Tendon Reflex: Its Physiology and Pathology*; *The Diagnosis of Intra-Cranial Syphilis*; *Text-book of Nervous and Mental Diseases*, a standard work; and *Cerebral Thermometry*, a treatise in which he set forth the theory of diagnosing cerebral disease by thermometry.

GREAT BRITAIN. The United Kingdom of Great Britain and Ireland has an area of 120,979 square miles, and a population estimated in 1900 at 40,599,954, of whom 31,742,588 were in England and Wales, 4,281,850 in Scotland, and 4,535,516 in Ireland. The chief towns of the kingdom are London, with a population estimated in 1899 at 4,546,752, or including the suburbs, 6,528,434; Glasgow, 733,903; Liverpool, 634,212; Manchester, 543,902; Birmingham, 514,956; Leeds, 423,889; Sheffield 361,169; Dublin, 361,891; Bristol, 320,911. From the figures of the last census in 1891 it appeared that 22 per cent. of the population of England and Wales live in six towns of upward of 250,000 inhabitants, 31.6 per cent. in towns of over 100,000 inhabitants, and 61.5 per cent. in towns of over 10,000 inhabitants. More than one-quarter of the total city population of England and Wales is concentrated in London. The industrial class in 1891 comprised about 33 per cent. of the total population above the age of 10; the agricultural and fishing class, about 5 per cent.; the commercial class, 5 per cent.; the domestic class, nearly 10 per cent.; the unoccupied class, nearly 40 per cent. The Church of England is the established church,

but all other sects are tolerated. There are many Protestant dissenting bodies, Roman Catholics (especially in Ireland), and Jews. Of 27,260 churches and chapels in the kingdom registered in 1897, 56 per cent. belonged to the Established Church.

Mineral Production.—The total value of the mineral production of the United Kingdom in 1899 is given in official reports as £97,470,296 against £77,415,063 in 1898. The principal non-metallic mineral, as usual, was coal, the output of which amounted to 220,094,781 tons, valued at £83,481,137, showing an increase of about 18,000,000 tons over the output of the preceding year. Next to coal, the most important mineral was iron ore, of which there were produced in 1898, 14,461,330 tons, valued at £3,895,485. Among other minerals may be mentioned limestone, 12,302,890 tons, value, £1,335,067, and clay, 15,064,857 tons, valued at £1,542,657. The total value of metals obtained from domestic ores during 1899 is given as £18,314,750, against £13,717,512 in the preceding year. The number of persons employed in the mining industries in 1899 is given as 729,009, of whom 715,205 were employed in coal-mining, 571,806, including 44,293 children between the ages of 12 and 16, under ground, and 143,399, including 4654 females, on the surface. The number of fatal accidents in and around the coal mines in 1900 was 1011, against 916 in the preceding year.

No reliable statistics for the mineral production of 1900 are available except in the case of coal (see article COAL), the output of which in the last year amounted to 225,170,163 tons, showing an increase of a little over 5,000,000 tons as compared with the output of the previous year. This increase, however, becomes insignificant when it is considered that during the last year the number of persons employed in coal mining was greater by 51,000 than in 1899, so that if the average output per hand had been the same as in 1899 the total production of coal would have been about 224,000,000 tons, or about 9,000,000 tons more than the actual output for that year. The output per hand employed during last year was only 289 tons, against 302 tons in 1899, while the average output per hand in the United States is estimated at over 400 tons. This falling off in the average output is due to different causes. Some English authorities, including the London *Economist*, are inclined to explain it by the fact that the remarkable increase in the wages of coal miners, which is estimated at about 5s. per week, has considerably affected the continuity of production in enabling the miners to work shorter hours and "take more holidays." Another and more plausible reason, given by another English publication which is devoted to the coal trade, is the gradual exhaustion of the seams, which is considerably affecting the largest of the coal mines operated at present. The total amount of coal exported by Great Britain in 1900 is given as 46,108,011 tons. The principal countries to which English coal is exported are France, Italy, Germany, Sweden and Norway, and Russia. The amount of coal exported to France during the past year was 8,636,632 tons, against 6,870,365 tons in 1899. The statistics for the production of iron ore in the year 1900 are not yet complete, but preliminary figures indicate that the output will fall short of that of the preceding year.

Agriculture.—The acreage under clover, grasses, and permanent pasture in Great Britain and Ireland is twice the area devoted to cereals and fruit. The steady decline in the extent of ground devoted to wheat-raising continued in 1900. The number of acres bearing wheat in Great Britain was 2,000,980 in 1899 and 1,845,042 in 1900; barley, 1,982,108 in 1899 and 1,990,265 in 1900; oats, 2,959,255 in 1899 and 3,526,088 in 1900; clover and hay, 21,438,698 in 1899 and 21,488,193 in 1900. The rise in the price of wheat partly compensated the farmer for the decrease in production. In 1899 the wheat crop was 65,529,395 bushels, in 1900, 52,639,809 bushels, showing a yield of 34.16 bushels per acre, in 1899 and only 31.31 bushels per acre in 1900. The live stock in 1900 included 11,454,902 cattle, an increase of 110,206 over 1899; 2,000,402 horses, a decrease of 27,600, and 31,054,547 sheep, a decrease of 625,678. Over 51 per cent. of the agricultural holdings in Great Britain are below 20 acres in extent, and over 96 per cent. are below 300 acres. The total number of holdings 1895 was 520,106 in Great Britain, and 577,962 in Ireland, 1898. For the purpose of furthering the study of improved methods of cultivation annual grants are made to institutions carrying on agricultural research. In 1900 there were eight collegiate centres working in conjunction with 6 associations and institutes and 37 administrative counties, and successful work was done in the line of discovering of insects and in the field of plant pathology. Recent statistics give much valuable information on the status of agricultural laborers in the United Kingdom. The condition of this class, miserable in the extreme during the first half of the century, has been improved of late, but is still hard in comparison with that of the industrial laborer. Hired for the most part by the week, they receive the greater part of their wages in board and lodging, and have little to store away for the idle season. The average earnings per week in 1898 were 16s. 10d. (\$4.05) in England, 16s. 5d. (\$3.95) in Wales, 18s. 1d. (\$4.35) in Scotland, and 10s. 1d. (\$2.42) in Ireland. In County Mayo and in the Orkney and Shetland islands the earnings were as low as 8s. 7d.

(\$2.05), and nowhere did they rise above 21s. 9d. (\$5.23). In England and Wales weekly wages increased by 4d. (8 cents) during the year ending June, 1899, and 8½d. (17 cents) in the year ending June, 1900. In July, 1900, there were 231,655 agricultural laborers in the Poor Law Unions, receiving joint relief. Of these, 91,469 had gained no increase in wages during the year, 3693 had gained 6d. (12 cents), 102,552, 1s. (24 cents), 25,552, 1½s. (36 cents), and 8939, 2s. (48 cents).

Manufactures.—The textile industries in 1900 had an unfavorable season for the most part. The linen and woollen manufacturers especially suffered from the scarcity of material in the case of flax, and the great fluctuation of price in the case of wool. Production in many instances was only made possible by the immense orders placed by the government for clothing and general supplies for the troops in South Africa. The exports of textile manufactures for 1900 were as follows: 158,299,100 pounds of cotton yarn, worth £7,743,026; 5,034,250,600 yards of cotton piece goods, worth £52,407,538; 16,361,800 pounds of linen yarn, worth £935,009; 154,800,100 yards of linen piece goods, worth £3,853,581; 57,164,200 pounds of woollen yarn, worth £4,493,273; 50,504,700 yards of woollen tissues, worth £5,883,391; 102,060,600 yards of worsted tissues, worth £6,470,680; 38,688,800 yards of jute yarn, worth £486,222; 173,898,700 yards of jute piece goods, worth £1,887,485. In 1900, 45,600,000 spindles consumed 1,617,700,000 pounds of cotton. Ten new cotton mills were erected during 1900, and at the end of the year 14 cotton mills, with nearly a million spindles, were in the course of construction. In 1891 there were 412,841 men (106,685 under 18 years of age) and 664,846 women employed in the textile industries. The exports of iron manufactures from Great Britain in 1899 were: Pig iron, 1,380,342 tons; rails, 590,667 tons; wire, cast and wrought iron, hoops and plates, etc., 1,746,171 tons, giving a total of 3,717,180 tons. In 1900 the corresponding figures were 1,428,549 tons, 463,960 tons, and 1,652,848 tons, with a total of 3,545,357 tons. British manufacturing interests in general, and the textile industries in particular, have shown of late a decided tendency toward consolidation. Individual *entrepreneurs* and partnerships are being replaced by stock companies, and stock companies have even begun to unite into "trusts." In 1900, 105 textile manufacturing concerns of England agreed to pool their interests, and entered upon the work of forming a permanent organization. Figures, by no means complete, show that since 1897, 24 combinations have been formed in the textile, iron, soap, coal, and other industries, involving a capital stock of \$295,000,000. For details see article TRUSTS (paragraph England).

Ship-building and Shipping.—In ship-building and in the size of her merchant marine Great Britain stands far above all other nations, though her superiority is being lessened every year by the progress of German and American shipping. In 1898 the output of the world's shipyards amounted to 1,893,000 tons. Of this Great Britain produced 1,367,570 tons, or over 72 per cent. In 1899 it launched 1,416,791 tons out of a total of 2,122,000, a little over 66 per cent.; and in 1900, 1,442,471 tons out of a total of 2,304,000, about 62 per cent. Of the output in 1900, 664 vessels of 1,432,600 tons were steamers and 28 vessels of 9871 tons sailing ships. The building of sailing vessels, as is evident, has become of almost no importance, and only light fishing smacks or trawlers are being constructed. Of the tonnage launched in 1900, 77 per cent. belonged to ports in the United Kingdom, and 23 per cent. or 677,000 tons (562,000 tons steam and 115,000 tons sail) was owned abroad. Germany and Austria were England's best customers in 1900, the former taking 7.2 per cent. of the total output, and the latter over 5 per cent. At the end of 1900, 1,269,919 tons were under construction, as against 1,306,751 tons on December 31, 1891. In 1900 the tonnage of the Kingdom gained 392,000 tons in steam and lost 172,000 tons in sail, showing an actual increase of 220,000 tons. The tendency toward the building of large vessels continued in 1900, when 150 ships of over 4000 tons were constructed. Large quantities of steel plate for ships were imported from the United States in 1900. During the year 1900, 29 warships of 68,364 tons were launched, a large part of the tonnage coming from private shipyards. The mercantile navy of Great Britain and her colonies at the end of 1900 approximated 14,372,000 tons, about one-half of the merchant fleet of the entire world. In 1898, 358,030 vessels of 100,547,373 tons entered, and 355,017 vessels of 100,300,183 tons cleared the ports of the United Kingdom.

Trade and Commerce.—Taken as a whole, the year 1900 was a very prosperous one for British traders and manufacturers. During the first part of the year at least prices were high, the manufactories had plenty of work, and were refusing orders, and large dividends were being earned on invested capital. For the calendar year imports increased by \$182,000,000 and domestic exports by \$131,000,000. It must be remembered, however, that the prosperous condition of industry in Great Britain for the year is not a proper index of the financial condition of the country. For many of the large orders—especially for ships, coal, munitions of war, and provisions—were on account of the war in South Africa. That is, the government borrowed in the year some £90,000,000, and expended this money either for supplies or in

paying soldiers, who had been very largely drawn from the class of producers. The condition in trade was, therefore, to a considerable extent, abnormal. For the first half of the year, as has been said, prices were high and the factories were busy. In the last half of the year there was a general drop in prices, and many factories shut down largely on account of the previously increased prices in coal and iron which made production unusually expensive. The position of the coal and iron industry (see articles COAL and IRON AND STEEL) caused much apprehension during the year. In the former case the large number of vessels used in the government transport service, the continually increasing number of business ventures which must ultimately depend for their success on the supply of coal, the scarcity of labor in Great Britain, and the enhancing difficulty under which mining is conducted there, combined to cause almost a coal famine. At the same time it was seen that coal could in the future probably be sent from the United States to Newcastle at such prices as would make English competition simply impossible. So that altogether the British outlook in this industry was most discouraging. It was also recognized that the United States was becoming predominant in the steel trade and was already acting to diminish British exports of manufactured goods. In one branch of the steel trade indeed no competition is feared from the United States—viz., in ship-building. This was extremely active in Great Britain throughout the year, there being a great demand for vessels of all kinds. Freights also were very high and more vessels were contracted for than in any previous year. The money market in London was apprehensive during most of the year. Several factors combined to cause this, among which may be mentioned the loans of the British government, the absence of a supply of gold from South Africa, and the financial difficulties of Russian and German banks. Many of the former were practically being carried by the Russian government in the early part of the year, and a number of the latter were forced to recall loans in large amounts which had been made on somewhat speculative securities in the previous two years. Toward the middle of the year some relief was afforded in London by the purchase of British government securities by the United States. (See UNITED STATES, paragraph Foreign Loans.) The following statement showing the commerce of Great Britain in 1900 in detail is from the Board of Trade returns for December, 1900:

IMPORTS FROM FOREIGN COUNTRIES AND BRITISH POSSESSIONS, 1900.

	Value.	Increase over 1899.	Decrease from 1899.
I. Animals, live, for food.....	\$46,789,631	\$484,850	.....
II. A—Articles of food and drink, duty free.....	868,737,636	45,612,483	.....
B—Articles of food and drink, dutiable.....	182,575,943	6,092,926	.....
Tobacco, dutiable.....	23,439,006	.....	\$3,378,135
III. Metals.....	161,503,577	23,767,538	.....
IV. Chemicals, dye stuffs, tanning substances.....	27,063,054	.....	1,018,739
V. Oils.....	53,758,255	6,599,066	.....
VI. Raw materials for textile manufactures.....	377,128,964	56,078,964	.....
VII. Raw materials for sundry industries and manufactures.....	316,587,350	40,280,624	.....
VIII. Manufactured articles.....	453,687,114	9,274,629	.....
IX. A—Miscellaneous articles.....	81,606,290	4,149,399	.....
B—Parcels post.....	5,448,655	.....	96,722
Total value.....	\$2,548,364,704	\$187,836,692	.....

EXPORTS OF BRITISH AND IRISH PRODUCE AND MANUFACTURES, 1900.

	Value.	Increase over 1899.	Decrease from 1899.
I. Animals, live.....	\$4,899,048	.....	\$479,531
II. Articles of food and drink.....	68,244,569	\$5,091,449	.....
III. Raw materials.....	208,722,732	74,422,236	.....
IV. Articles manufactured or partly manufactured:			
A—Yarns and textiles.....	497,506,961	13,567,529	.....
B—Metals, manufactures of (except machinery and ships)	221,050,961	24,896,561	.....
C—Machinery and millwork.....	95,498,307	.....	153,562
D—Ships, new (not registered as British).....	41,891,577	.....	2,833,867
E—Apparel and articles of personal use.....	50,612,266	4,090,416	.....
F—Chemicals, drugs.....	45,119,803	2,087,856	.....
G—All other articles.....	177,945,568	8,229,758	.....
H—Parcels post.....	14,364,935	2,357,610	.....
Total value.....	\$1,418,197,779	\$181,196,434	.....

EXPORTS OF FOREIGN AND COLONIAL MERCHANDISE, 1900.

Total value.....	\$307,072,685
Decrease.....	9,453,883

It may be seen from this table that the largest increase in British exports was that of raw materials. This is especially noteworthy in view of the fact that the competition of the United States and Germany is almost entirely in manufactured products, and therefore the failure of Great Britain to show a considerable increase in these products shows that this competition is extremely active. In reference to the competition of the United States (see UNITED STATES, paragraph Commerce), there was much discussion during the year, and many exaggerated statements were made in both countries. Since 1800 British exports have multiplied tenfold and imports twentyfold, while population has increased but fivefold. In China and Africa, moreover, Great Britain has large trade interests whose possibilities are yet undeveloped. With Australia also a continually increasing trade may be expected, and the same may be said with regard to Canada, Russia, Japan, and India. The fact that England is now importing goods to the value of over \$1,000,000,000 in excess of her exports does not show the decline of her commercial position, but only that she is an immense creditor nation whose holdings in many parts of the world are so large as to enable her to draw out her profits and use them for her own benefit in the home country.

The following table shows for ten years the imports, exports, and total commerce of Great Britain and the United States:

YEAR.	*Imports of Great Britain.	Imports of the United States.	*Exports of Great Britain.	†Exports of the United States.	‡Total commerce of Great Britain.	‡Total commerce of the United States.
1891	\$2,118,856,000	\$828,320,043	\$1,203,046,000	\$957,333,351	\$3,622,955,822	\$1,793,907,372
1892	2,062,182,000	810,380,955	1,105,633,000	923,237,315	3,481,302,078	1,779,351,615
1893	1,969,212,000	776,248,024	1,062,063,000	854,729,454	3,317,767,496	1,652,357,705
1894	1,987,007,000	676,312,941	1,051,085,000	807,312,116	3,319,247,874	1,401,415,189
1895	2,037,614,000	801,669,347	1,110,389,000	807,742,415	3,418,473,368	1,626,529,483
1896	2,149,843,000	681,579,556	1,168,550,000	986,830,080	3,591,682,762	1,687,416,797
1897	2,194,707,000	742,595,229	1,139,715,000	1,079,834,296	3,626,156,178	1,842,304,274
1898	2,238,864,000	631,964,448	1,135,525,000	1,233,558,140	3,719,534,250	1,890,510,754
1899	2,360,380,000	798,967,410	1,287,840,000	1,322,932,144	3,964,601,255	2,074,435,381
1900	2,548,265,000	829,019,137	1,418,196,000	1,453,013,159	4,273,536,256	2,306,969,093

* The figures given for the imports and exports of Great Britain are calculated only in round numbers and may each vary from the correct amount to a maximum of \$3,000, but the variation is usually considerably less. The figures for the total commerce of Great Britain are believed to be exact.

† The figures given for exports do not include the exports of merchandise produced outside of the country, that is, merchandise which has been imported to the country and is then re-shipped and exported. In the case of Great Britain the amount of merchandise so re-shipped has averaged yearly since 1890 nearly \$300,000,000. In the case of the United States re-shipped merchandise has increased by fairly equal amounts from \$13,000,000 in 1890 to \$25,000,000 in 1900.

‡ The figures given for total commerce are found by adding together the figures for imports and exports, but the exports are here taken to include both the exports of merchandise of domestic production and the exports of merchandise of foreign production, that is, both true exports and re-shipments.

It will be seen from this table that while the United States imports have, since 1890, remained about even, the imports of Great Britain have increased by \$438,000,000. While, also, the exports of Great Britain have increased by \$215,000,000, the exports of the United States have increased by \$504,000,000. Yet the total commerce of Great Britain has increased by \$651,000,000, while the total commerce of the United States has increased by only \$513,000,000. It will also be noticed that the total commerce of Great Britain is nearly double that of the United States, and this does not by any means point to a nation which is being entirely outstripped in the world's commerce. At the same time, since the commerce of Great Britain was in the first place so much greater than that of the United States, one would expect that the increase would be proportionately greater, whereas it has been smaller. It is owing to this fact that there is some justice in the complaints which have been recently made by British manufacturers. For American exports of manufactured goods have shown a marked increase, with which the British manufacturers have not kept pace. As an example of this may be mentioned the relative exports of Great Britain and the United States to Canada and South Africa. In 1889 the volume of the export trade of the United States with South Africa was only one-fifteenth that of Great Britain. In 1899 it was one-fifth. To Canada Great Britain's export trade diminished in those ten years to the extent of about \$9,000,000, while, on the other hand, that of the United States increased by the amount of \$45,000,000. In agricultural machinery America has almost ousted Great Britain in foreign markets, and the same may be said of machine tools. In fact, in all steel and iron products the United States, if not directly taking away British foreign markets, is tending to prevent those markets from increasing. Part of the American success is to be ascribed to greater facilities of production and to more economical

management and devices, and part is to be ascribed to the difference of attitude between the British and American workmen. The American does not resist the introduction of labor-saving machinery so strongly and effectively as the British workman, who usually does not consent to new improvements without imposing at the same time conditions which rob the innovation of all its advantages to the manufacturer. Again, in many steel products, standardization is carried to a much greater extent in America than in England. Tools and appliances are manufactured in accordance with certain sizes and patterns, and individual orders for intermediate sizes are not accepted unless they are very large. Finally, there seems no doubt that the American business tactics are more shrewd and aggressive than those employed in Great Britain. "The contracting for the electric lifts for the Central London Railway, secured by a well-known American house in the teeth of stupendous opposition when the consulting engineers had virtually made up their minds that hydraulic lifts would be the order of the day," is cited by an English writer as a striking instance of the practical results attained by American enterprise and business tact. The same writer summarizes as follows the causes which are operating disadvantageously to Great Britain in the manufacture of products for the markets of the world:

(1) The general indisposition to adopt improved appliances and to scrap old and effete tools.

(2) The absence of the system of standardization.

(3) The failure to adopt the best commercial methods.

(4) The lack of an adequate and complete system of commercial and technical education.

(5) The restriction of output due to the trade unions.

(6) Our inability to execute big contract work to time requirements in consequence of our state of unreadiness for expanding trade.

(7) And last, and most important of all, foreign protective tariffs. See UNITED STATES (paragraph COMMERCE).

Navy.—The insistence in 1900, as a result of the Boer War, upon a thorough reorganization of the army, affected also the navy to some extent. This was manifested by a bill increasing and making another division of the naval reserve, and by increased naval estimates allowed by Parliament for the year ending March 31, 1901, and by the retirement early in November of Mr. Goschen as first lord of the admiralty. Mr. Goschen was succeeded by Lord Selborne, who had for five years been under-secretary of the Colonial Office. The appointment was generally approved on the ground that improvements in the organization and efficiency of the navy had not within recent years kept pace with those effected by other European Powers. The Naval Reserve act, which received royal approval on August 8, was intended gradually to raise a naval reserve force of 15,000, composed of men who had at some time served in the navy or marines, or who were qualified as long-service pensioners. The long-service pensioners coming under the classes specified for naval reserve service were to have their pensions conditioned upon their entering this service. The naval estimates allowed by Parliament for the year amounted to £27,522,600. This was an increase of £928,100 over the amount voted in the previous year. Of this increase only about £108,000 was due to increased ship-building. The remainder was mainly due to expenses growing out of the South African War and to higher pay granted to certain divisions of the service. In July a further sum of £1,269,300 was granted for the purpose of additional guns and munitions. The total *personnel* of the navy, as provided for in the estimates, was 114,880, this being an increase of 4240 over the preceding year. In his annual report of February 26, 1900, the first lord of the admiralty stated that progress in building the ships authorized for the navy had been seriously retarded during the past year. Many delays had occurred in the delivery of material, and especially in the delivery of machinery and armor. Part of this delay was due to the difficulty experienced by the contractors in securing adequate numbers of workmen, and part was due to the fact that the ships under construction generally called for machinery of great power, and the number of firms that could produce this machinery was necessarily limited. In view of these facts only two battle-ships, six first-class armored cruisers, one second-class cruiser (to take the place of three third-class cruisers previously authorized), two sloops, two gunboats, and two torpedo boats were, in addition to those already under construction, authorized for the year 1900-01. Of the ships ordered or being built for the British navy in November, 1900, the following are the most important: First-class battle-ships, eight nearing completion, six building, and two ordered; armored cruisers, one nearing completion, thirteen building, and six ordered; one first-class cruiser nearing completion, three second-class cruisers building and three third-class cruisers nearing completion. In July, 1900, elaborate manœuvres were held off the coast of England under the direction of the admiralty. While no definitive results were obtained from these, it was stated that

the following facts had been made manifest: (1) It was quite useless to place inferior vessels in line with modern ones until and unless the latter had been reduced by the enemy to an efficiency commensurate with the former. (2) It was of great importance to make thorough arrangements for the co-operation of the naval and military authorities in case of war, and that this was especially true in regard to the defence of England. (3) It was absolutely necessary to provide before war broke out for auxiliary vessels carrying ammunition, coal, water, etc. It was pointed out in connection with the admiralty transport department of the navy that the work of this department in transporting troops to South Africa had proved to be thoroughly efficient. Between July 1, 1899, and March 31, 1900, 7566 officers, 192,089 men, 59,073 horses and 32,678 mules were carried to Cape Colony and Natal from different parts of the world. During this entire service no human lives had been lost and barely $2\frac{1}{2}$ per cent. of the animals died.

Army.—For the year 1900-01 the normal distribution of the regular army is estimated as follows: At home, 150,509 men; in Egypt, 4287 men; in the colonies, 43,602 men; in India, 73,484 men. In addition there are 12,066 colonial troops. Almost the whole of the regular army, together with the reserves, and some militia and volunteer regiments were in South Africa during the greater part of the year. In 1899 the army reserves consisted of 90,000 men; the militia, 136,300; the yeomanry, 11,891, and the volunteers, 264,833. The total military establishment at home at the beginning of 1900 was 679,333 men. In 1899-1900 the budget estimates of £20,617,200 were increased by a supplementary estimate of £23,000,000; for 1900-01 the estimates are £61,499,400, of which £21,777,700 formed the normal estimate, £6,228,000 was for special temporary measures, £1,925,000 for permanent additions to the army, and £31,568,700 for war charges. See paragraph on Army Reorganization.

Education.—Primary education is compulsory, and is administered in England and Wales under the board and voluntary systems. Under the first, district boards all over the country are charged with the duty of creating sufficient schools to meet the demand for elementary instruction; under the second, schools managed by private persons are granted a stipend by the government on condition that their pupils attain a set standard of proficiency. Religious instruction in the board schools must be unsectarian, in the voluntary schools may be sectarian. At the end of 1899 there were 20,118 inspected schools, with accommodation for 6,441,145 pupils and an average daily attendance of 4,644,213. In Scotland there were, in the same year, 3067 inspected schools, with an average attendance of 731,276; and in Ireland, in 1898, 8651 schools, with an attendance of 578,799. Secondary education is entirely unorganized, and there are no regular official statistics on the subject, but extensive investigation in 1897 showed that 6209 schools, of which 5167 were private, were attended by 291,544 scholars. In Scotland the high schools are under the supervision of the district boards. In 1899, 85 secondary schools, 31 of them public, had an attendance of 15,377. In Ireland the spread of secondary education can be estimated only from the number of candidates appearing for examination before the Intermediate Examination Board. In 1898 the board examined 9073 candidates. Of institutions of higher education, there are five universities in England: Oxford, Cambridge, Durham, London, and Birmingham; four universities in Scotland: Aberdeen, Edinburgh, Glasgow, and St. Andrews; three universities in Ireland: Dublin, Royal, and Catholic; and 17 colleges in all the three kingdoms. Oxford University, with its 23 colleges, had at the beginning of 1899 a teaching staff of 95 and a student list of 3446. Cambridge University, with 19 colleges and 116 teachers, had an attendance of 3016. The universities of Edinburgh and Glasgow were attended by 2848 students and 2010 students respectively. In April, 1900, primary, secondary, and technical education came under the control of a Board of Education, consisting of a chairman, the lord president of the council, the principal secretaries of state, the first commissioner of the treasury, and the chancellor of the exchequer. An advisory committee, composed of men "qualified to represent the views of the universities and other educational bodies," was also created. The new board was expected to institute radical reform in the departments of primary, secondary, and technical education. Owing to the existence of two independent systems of elementary instruction there was no definite policy adopted in the old Education Department, and little effort was made to co-ordinate the work of the board and the voluntary schools. In the latter especially great abuses arose. The chief object of the schoolmasters was to earn the parliamentary grant by sending up as many pupils as possible for examination. The schools consequently were conducted with little regard for educational principles, and principally for the purpose of "cramming." By perfecting the system of school inspection and introducing uniformity of instruction in the board and voluntary schools, these abuses, it was thought, would be remedied in great measure. Secondary education, as authorities in England put it, is in a chaotic condition. It is more nearly correct to say that there is no system of

secondary education at all, for the English high schools, being all private, are conducted according to the individual ideas of the owners or trustees. The financial condition of the majority of teachers in these schools is bad; their qualifications are less than desirable. To ameliorate the status of the high school teachers by enrolling them and placing them under official supervision was made one of the duties of the Board of Education. In the line of technical instruction the facilities are entirely disproportionate to the needs of an industrial nation like England. To increase greatly the scope of this department was a feature of the new educational policy.

Merchant Marine.—As estimated in *Lloyd's Register*, the total tonnage for the year ending June 30, 1900, of the steamships and sailing vessels of over 100 tons register each in all countries is 29,043,728, and the number of vessels is 28,422. Of this number Great Britain and her colonies are credited with 10,838 vessels, having a tonnage of 14,261,254. The total gross tonnage of the world's steamships is given as 22,369,356, of which Great Britain and her colonies have 12,149,090 tons; Germany, 2,159,919 tons; the United States, 1,454,966 tons; and France, 1,052,193 tons. During the year 1899 vessels, exclusive of war-ships, to the number of 726 were launched in the United Kingdom. These call for an aggregate gross tonnage of 1,416,791, divided as follows: Twelve sailing vessels, 2017 tons; 714 steamships, 1,414,774 tons. In the same year there were being built at British colonial ports and in foreign countries 292 steamships and 251 sailing vessels, having a gross tonnage respectively of 530,945 and 174,002. A comparison of the tonnage of sailing vessels being built in the United Kingdom and in other parts of the world and similarly of steam vessels being built, will show that the superiority of the United Kingdom in the building of modern vessels is much greater than when the figures for total tonnage are not analyzed. Thus it is evident that while the total tonnage of vessels, other than war vessels, under construction in the United Kingdom in 1899 was about twice the tonnage in all other parts of the world, the tonnage of steam vessels constructing in the United Kingdom was nearly three times that of all other countries. The amount of tonnage lost in 1899 by wreck or breaking up is estimated at 345,000 in steam vessels, and 382,000 in sailing ships. The net increase for the year, therefore, in steamships was 1,600,719 tons, while in sailing ships there was a decrease of 207,098 tons. The loss of the United Kingdom in sailing tonnage is given as 185,000 tons, and the net increase in steam tonnage as 498,000 tons. Excluding war-ships, there were being constructed in the United Kingdom on September 30, 1900, vessels with an aggregate gross tonnage of 1,204,008; of these, 423 steamships called for a tonnage of 1,192,412, and 29 sailing vessels called for 11,596 tons. The following steamship lines are subsidized by the government in order that their fastest vessels may be used in case of war: The Cunard Line, White Star Line, the line owned by the Canadian Pacific Railway Company, and the "P. & O." Line. An act was passed by Parliament in 1900 to restrict the liability of ship owners and dock owners.

Finance.—The revenue for the year ending March 31, 1900, excluding the local taxation accounts, amounted to £119,840,000. The ordinary expenditure amounted to £110,505,000, and the expenditure, including war charges, aggregated £133,722,000, leaving a deficit for the year of £13,882,000. For the year ending March 31, 1901, the chancellor of the exchequer estimated that the ordinary expenditure would be £116,035,000, which could be reduced to £111,395,000 by suspension of the sinking fund. To this latter sum should be added £38,660,000 for war charges, bringing up the estimated expenditure to £150,061,000. Supplementary grants by the House amounting to £13,309,000 for prosecution of the war in South Africa, for military operations in China, and for other immediate purposes, further increased the total amount to £163,370,000. As against this total the chancellor estimated the ordinary current income of the year at £115,268,000. In order to increase the income Parliament voted to increase by 4d. the income tax, so that it would stand at a shilling per pound, and to add to the duties on beer, spirits, tobacco, and tea. By these means it was estimated that the total ordinary income would be increased to £127,520,000. The deficit for the year would then amount to £35,850,000, and to this sum should be added £13,882,000, the deficit remaining over from the year ending March 31, 1900, making thus a total deficit of £49,732,000. To meet this deficiency two war loan acts were passed by Parliament. The first authorized the borrowing of £35,000,000 either by a special war loan or by the issue of treasury bills. The second act, following the parliamentary supplementary grants, authorized the borrowing of £13,000,000 more by means of a supplemental issue of war bonds, or by an issue of treasury bills or exchequer bonds. By a parliamentary act of 1899, moreover, the chancellor of the exchequer was entitled to place against the deficit £8,000,000 in treasury bills. Under the first war loan act of 1900, £30,000,000 were issued in March at 98½ in bonds bearing 2¾ per cent. interest, and redeemable April 15, 1910. From this issue the government realized £29,550,000. A second issue of bonds was

made in August to the extent of £10,000,000. Of the first series the United States took about £7,000,000, and of the second over £5,000,000. Besides these war bonds the British government issued treasury bills under the acts of 1899 and 1900 until the deficiency was met, leaving some £6,000,000 of borrowing powers unexercised. On March 31, 1899, the total gross liabilities of Great Britain amounted to £635,040,965, divided as follows: Funded debt, £583,186,305; estimated capital value of terminable annuities, £36,243,280; unfunded debt, £8,133,000; miscellaneous capital liabilities, £7,478,380. On March 31, 1900, the total gross liabilities amounted to £639,165,265, divided as follows: Funded debt, £552,606,898; estimated capital value of terminable annuities, £60,238,885; unfunded debt, £16,133,000; other capital liabilities, £10,186,482. Most of the sums noted as "other capital liabilities" are charged to the annual estimates, and are not considered as part of the fixed debt. Excluding these, the debt in 1899 would be £627,562,585, and in 1900, £628,978,783. The debt of Great Britain is of long standing, the first loan, partially repudiated, having been made by Charles II. In the time of Queen Anne the debt amounted to about £13,000,000, and at the accession of George III., it stood at over £100,000,000. In 1784 the debt was nearly £250,000,000. The war against Napoleon added over £600,000,000, so that in 1815 the debt reached nearly £900,000,000. Since that time the debt has been regularly reduced.

HISTORY.

Parliament.—The seventh and last session of the fourteenth Parliament was opened on January 30, 1900. Sir Henry Campbell-Bannerman was chosen to succeed himself as leader of the Liberal party. The relative strength of the political parties in the House of Commons was as follows: Conservatives, 333, Liberal-Unionists, 66, or a total vote for the government of 399; Liberals, 189, Nationalists, 82, or a total vote for the opposition of 271. These figures, however, are somewhat misleading, since the Opposition vote was not cast as a unit, nor could it be depended upon in questions relating to the South African War, with which Parliament was chiefly occupied. The majority of the Liberals, while criticising without stint the events leading up to the war and the conduct of the government in the war, heartily supported the government in measures deemed necessary for its successful conclusion. A minority of the party, however, condemned the war "as a crime and a blunder committed at the instigation of irresponsible capitalists," and advocated the speedy return of England to a peace footing. When, on July 26, a motion was brought up to reduce the salary of Mr. Chamberlain as colonial secretary, the dissolution of the Liberal opposition for practical purposes seemed complete. Thirty-one Liberals voted for the motion, 40 voted against it, while more strongly to express their disapproval of the motion, Sir Henry Campbell-Bannerman and 35 Liberals walked out.

The queen in her speech opening Parliament stated the determination of her subjects to "renew their exertions until they had brought this struggle for the maintenance of the empire and the assertion of its supremacy in South Africa to a victorious conclusion." Largely increased grants were asked for the military and naval services; the former on account of the war, the latter because "several other nations were perfecting their naval preparations at the cost of increasing efforts and sacrifices," and it would not be well for Great Britain's naval efficiency to flag. The time was stated to be unpropitious "for any domestic reforms involving a large expenditure." Amendments were asked, however, in the laws governing limited liability companies (see paragraph Companies), in those relating to agricultural tenancies, and to ecclesiastical assessments in Scotland. Measures were also asked for the relief of the tithe rent-payers in Ireland. Parliament was further asked to pass bills to control the contracts of money-lenders, to amend the factory law, the law of lunacy, the law for the housing of the working classes, and the law affecting railroad accidents. Nearly all of these recommendations were adopted by Parliament, and an act was also passed extending the benefits of the Workmen's Compensation act of 1897. The specific measures are discussed in succeeding paragraphs. In proroguing Parliament on August 8 the queen stated with regard to the South African War that, "Believing that the continued political independence of the two republics would be a constant danger to the peace of South Africa, I have authorized the annexation of the Orange Free State to my empire."

Church of England.—The ritualistic controversy which began in 1898 showed few signs of subsidence in 1900. In 1899 Parliament had passed a resolution deploring the spirit of lawlessness in the church and expressing the hope that the ministers of the crown would not recommend any clergyman for preferment who would not loyally obey the bishops, the prayer-book, and the law, as declared by the courts having jurisdiction ecclesiastical. The so-called Lambert decision, rendered by the archbishops of Canterbury and York September 30, 1899, held, in effect, that the liturgical use of incense and the carrying of lights in procession were unwarranted



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**FOUR ENGLISH STATESMEN.—1. Lord Roseberry. 2. Rt. Hon. Joseph Chamberlain.
3. Sir Henry Campbell-Bannerman. 4. Lord Salisbury.**

under the Book of Common Prayer. The great majority of clergymen who had previously used incense either omitted the practice in 1900, in accordance with this decision, or when permitted to do so by their bishops, used the incense in a separate service apart from that of the Holy Communion. Three London rectors, however, declined to omit the ceremonial use of incense, but although urged to do so the Bishop of London did not take action against them. Two protests of importance were submitted against the Lambeth decision. One was presented to the archbishops by a large number of prominent clergymen, and the other was handed to the Archbishop of Canterbury by the Duke of Newcastle as representing some 14,000 laymen. The archbishops, however, declined to recede from the position they had taken. At the end of the year (1900) much interest was caused in church circles by the Duke of Newcastle's visit to the United States. It was said that he had come for the purpose of reviving, so far as possible, ritualistic practices. The subject of the obedience of the clergy was again brought up in Parliament in 1900. A bill was introduced, but not passed, having for its object "the better enforcement of discipline in the Church of England." In the House of Commons attention was called to the resolution of Parliament in 1899, and doubt was expressed whether that resolution had been kept in view in all subsequent cases of ecclesiastical preferment. In the House of Lords the Earl of Portsmouth asked if some practical measures were not to be taken to insure the obedience of the clergy to the law. The Archbishop of Canterbury and the Marquis of Salisbury, in replying, said, in effect, that patience and leniency would, they thought, bring about the desired conformity of the clergy. It was desirable to act with extreme caution, in order that this matter on which men's consciences were much set, might not result in a disruption of the whole church body.

Another cause of comment during the year were the intercession services for the troops in South Africa. Lord Kinnaird asked in the House of Lords "whether any precedent could be found since the Reformation Settlement in which prayers for the dead had been introduced 'by authority' in any special service put forth by any of the archbishops of Canterbury." The archbishop replied that special prayers had been issued in 1777 and in 1798, and that they were within the law. The Earl of Portsmouth held that no authority had been shown by the archbishop, and that it would be a matter of moment if the set principles of the Church of England could be undermined through the means of special prayers introduced without warrant.

On May 1, 1900, the archbishops of Canterbury and York, in the case of the lawfulness of reserving the sacrament, which matter was argued before them in July, 1899, decided that there was no authority for such reservation; and that while it was competent for the clergy to advocate the repeal of the law, it was not proper for them to act of their own motion in advance of any repeal or modification which might be made. In accordance with a request made to the Bishop of London in May, a Round Table Conference on Ritual met on October 11 at Fulham Palace. The members of this conference were: The Rev. Prebendary Barlow, Professor Beran, Dr. Rigg, the Rev. N. Dimock, Canon Gore, Professor Moule, Canon Newbolt, Dr. Robertson, Canon Robinson, Professor Sanday, the Rev. Prebendary Wace, W. J. Birkweek, Lords Stamford and Halifax, and Chancellor P. V. Smith.

London Government Act.—The new London Government act of 1899 went into effect on November 1, 1900. Before that time London was governed by nearly 500 public bodies, whose membership approximated 10,000. There was, in the first place, a London County Council, and this body has been retained under the new law. The County Council is the central administrative authority. Although the maintenance of public order and the administration of justice are under the direction of the Home Office, nearly all other matters affecting metropolitan London are controlled by the council. Subordinate to the council, but neither much controlled nor guided by it, were the *vestries* and *district boards*. These were, in effect, a relic of old-time rural government. With the exception of the venerable "city of London" itself—scarce a mile square, and given over to business by day and caretakers by night—metropolitan London was divided into parishes of the most diverse size and wealth. The parishes were directly or indirectly governed as to local matters by vestries of from 18 to 120 members each, elected by the taxpayers. The vestries of the more important parishes were called "administrative vestries," and had limited authority over roads, lighting, sanitation, etc. But the less important parishes were grouped together into districts, and the districts were governed by district boards elected by the vestries. Hence these "non-administrative vestries" became, in many instances, mere "electoral colleges," without authority and without honor. There were, before the governmental act of 1899, 30 administrative vestries, with a total of 2481 members, and 44 non-administrative vestries, whose 1632 members appointed 619 representatives on 12 district boards. Besides the vestries and the County Council there were *ad hoc* bodies—i.e., bodies exercising one function only—whose existence introduced confusion into the entire system. Special

bath commissioners, burial commissioners, and library commissioners pursued their way as they chose. "Overseers of the poor" independently collected and assessed taxes and prepared jurors and voters' lists. There were local boards of health and trustees of markets. There were, in general, boards for every purpose. And as the vestries were, as a rule, drawn from the ranks of obscure tradesmen, no corrective was applied to this halting and intermeddling method. By the new law the vestries and district boards are abolished and also nearly all of the *ad hoc* bodies. Municipal London is divided into 28 boroughs or municipalities, governed by borough councils. Each council is to consist of a mayor, not more than 10 aldermen and not more than 60 councillors. To these borough councils are transferred the powers previously exercised by the vestries and by the administrative bodies *ad hoc*. In the borough councils are also vested certain powers taken from the London County Council. Among these are the power to license the construction of wooden buildings, to remove street obstructions, enforce conformity to the Building act, regulate water companies, and to acquire land and erect and manage lodging-houses for the working classes. These last provisions are known together as Part III. of the Housing act, and around the question of transferring to the borough councils the power conferred by it centred the main opposition to the government bill. This opposition was somewhat covert, and did not appear justified on public grounds. On the other hand it was pointed out that while the London County Council had pulled down many unsanitary buildings and erected in their stead "model tenements," as provided for by Parts I. and II. of the Housing act, the council had, to a very limited extent, acquired and built upon vacant land, as under Part III. It was also said that the "model tenements" accommodated only about two-thirds as many people as the displaced rookeries, and that, therefore, the congestion had been merely shifted with worse effect to other sections; whereas, if vacant land had been built upon a real and general relief would have been afforded. The government act localizes both the authority and responsibility for solving the problem of the tenement districts. Another power given to the borough councils authorizes them to maintain main roads, and to close roads without the permission of the County Council, as previously required. In order to introduce a measure of elasticity in the government and to conform its practice to actual needs as they may arise, provision is made, upon the application of the County Council and of a majority of the borough councils, for a transference to either of these bodies of any power exercised by the other. The borough councils are authorized, in the interests of their constituents, and to strengthen local government, to promote or oppose bills in Parliament, and to prosecute or defend legal suits. In order to simplify the complicated finances of London, the separate sewer and lighting taxes are made part of the general tax, and the general tax is amalgamated with the poor tax, with the same rules for assessment and collection which apply to the latter. The overseers of the poor are abolished as separate bodies, and the borough councils are directed to take over their powers, except that the town clerks are to make out the voters' and jurors' lists. One-third of the councillors may be elected every year, or all of them every three years, and women are not eligible as in the old vestries. The large responsibilities attending the new offices, through the great reduction in the number of officers and the consequent concentration of power will, it is believed, attract a different and better class of men. The "city of London" itself is not affected by the changes. "Its government of freemen and liveryies and worshipful companies is the same yesterday, to-day, and forever. The new act is not so sacrilegious as to touch it." The lord mayor, aldermen, and councillors constituting, as surviving representatives of the mediæval guilds, the city corporation may still exercise unchecked their ancient prerogatives. Another defect in the law is said to lie in the fact that the new boroughs still vary greatly in size and importance. Thus Holborn is only 409 acres, while Wandsworth is 9285; the population varies between 33,485 in Stoke Newington and 336,764 in Islington, while the taxable value varies from about £1,500,000 up to Westminster, with £25,000,000. It was also stated that the control of the local authorities by the County Council had not been enough strengthened, and that the latter should have been given "very full powers to secure uniformity of administration and consistent action in all matters of general importance, and especially in all matters which affect health." It was generally recognized, however, that the new law was a great improvement upon the old.

Companies' Act.—One of the most important commercial measures passed by Parliament, receiving royal assent on August 8, was that in regard to the organization and promotion of share companies, the allotment of shares and the profits of promoters. While it was admitted that the bill was somewhat in the nature of an experiment, and that it would be impossible by any legislation wholly to guard outside investors from the effects of their own rashness, still it was believed that the publicity required of new companies by the bill would, in a great measure, protect prudent investors. The bill enacted that no person should serve as director in a

company until he had signed an agreement to take the number of shares which his qualification as stated in the prospectus called for. When the application for the registration of a new company was filed with the registrar, a list of persons should be given who had consented to serve as directors, and who had duly qualified therefor by agreeing to take shares. The shares of a company could not be allotted unless the whole amount offered for public subscription had been subscribed, or unless that amount had been subscribed which was stated in the prospectus as the minimum subscription on which the directors would go to allotment. The amount of subscription so reckoned should be exclusive of any shares payable otherwise than in cash. If the amount required before the company could go to allotment had not been subscribed within forty days after the first issue of the prospectus, the company was directed to return to applicants for shares all money received from them. And if under these conditions the money was not returned within forty-eight days after the first issue of the prospectus, the directors of the company were to be liable for 5 per cent. interest upon the money until returned. New companies were forbidden to commence business or borrow money until shares had been allotted to an amount not less than the minimum subscriptions, upon receipt of which the company had stated in its prospectus that it would go to allotment; and also until every director had paid for the shares taken by him in the same manner and to the same proportionate amount that had been paid by the public. Underwriting, which had been illegal in England, was made legal by the Companies' bill on the ground that it would be extensively practised whether or not it was legal, and that by legalizing it some of its worst features might be abolished. New companies were permitted by the act to pay commissions to banking houses or others for underwriting proposed issues of stock, provided that this underwriting was authorized by the company articles of association and that the amount of the commission to be paid the underwriters was made public in the prospectus. Perhaps the most important clauses in the bill as regards the protection of the public were those dealing with the contents and publication of the prospectus. The bill enacted that every prospectus should contain: 1. The contents of the memorandum of the company association with the names of the signatories and the number of shares for which each subscribed. 2. The number of shares fixed as the qualification of directors and any provision made as to the remuneration to be given directors. 3. The minimum subscription on which the directors would allot shares. 4. The number of shares to be issued as fully paid up or to be given in whole or in part for any other consideration than cash and what that consideration was. 5. The amount paid or to be paid for underwriting. 6. The amount paid or to be paid to any promoter and the reason therefor. 7. The parties to every contract made by the company and provision made for the inspection of contracts by the public. 8. Particulars of the interest of every director in any property bought, or proposed to be bought, by the company. Other measures of the act provided that the first statutory meeting of the company should be held within a period of not more than three months from the date on which the company was entitled to commence business; that a company should not, prior to this meeting, vary the terms of any contract referred to in the prospectus; and that the directors of a company should, on request of the holders of 10 per cent. of the capital stock, convene a general meeting of the company.

Money-Lenders' Act.—An act receiving royal assent on August 8 intended to give borrowers of money such protection as would be afforded by a court of equity. The bill enacted that when a money-lender brought suit in any court to recover the principal or interest of any money lent, the court should take evidence in reference to the interest charged and the total amount taken in addition by the money-lender under the form of fines, premiums, and bonuses. If the court found, after taking into consideration the risk of the lender and other pertinent matters, that the transaction had been unjust to the borrower, the court was authorized to reopen the transaction and, notwithstanding any agreement between the lender and the borrower, to relieve the persons sued from payment of any sum unjustly charged. And if this sum had already been paid by the borrower to the lender then the lender was to repay it.

All money-lenders were required to register at a place provided by the commissioners of inland revenue in the trade names under which they conducted business. And these registrations must be repeated every three years. All money-lending must be conducted under the names as registered. If a money-lender failed to register, as required, or carried on business under a name or names not registered, he was to be fined for the first offence, and fined or imprisoned, or both, for the second. If the offender was a corporation, then the corporation should be fined and for the second offence in a sum not exceeding £500. But prosecutions for this offence should not be instituted in England unless with the consent of the attorney-general or solicitor-general, nor in Scotland except with the consent of the lord advocate, nor in Ireland except with the consent of the attorney-general or solicitor-

general. If any money-lender or his agent, or if any director or other officer of a corporation put out loans by means of deceptive statements or representations, or by the concealment of any material facts, he was to be deemed guilty of a misdemeanor and should be liable to a fine not exceeding £500, or to imprisonment for two years, or both. The provisions of this act included any person whose business was properly that of a money-lender, but excluded pawnbrokers, friendly and benefit societies, loan societies, and persons engaged in direct banking or insurance business.

Railroad Employment—Prevention of Accidents.—In accordance with the findings of a royal commission appointed in 1899, a bill was passed by Parliament and received royal assent on July 30 having for its object the prevention, so far as possible, of accidents to railroad employees. The bill provided that the Board of Trade should have general supervision over those railroad appliances which most generally and directly brought about injuries in railroad service. The board was directed in this connection to make rules concerning brake-levers, protection of signal wires, the lighting of stations or sidings near which shunting operations were carried on, and in general to make regulations for the use of minor railroad appliances. The board was further authorized to make rules concerning methods of conducting railroad service whenever the board was convinced that the methods in use involved unnecessary danger, and to require railroads to use new appliances which would reduce danger. But in this latter case adequate time must be given a railroad to carry out the requirements of the rules made by the board. If after fair hearing the railroad objected to introducing new methods or appliances, the matter was to be referred to the railway and canal commissioners, or to a referee. This board or the referee should consider whether the requirements made by the board would seriously interfere with the trade of the company or with its necessary operations. Railroad companies were required to give notice of all injuries sustained, not only by passengers, but by any employee in their service. In cases where a line or siding was used in connection with a mine or factory, and was not properly a railroad by itself, it was made the duty of the manager or operator of the mine or factory to report accidents occurring on this siding to the secretary of state, to whom was given the same powers and duties to investigate the matter as were given to the coroner of the Board of Trade in case of railroad accidents.

Agricultural Holdings Act.—An act received royal assent on August 8, to go into effect January 1, 1901, providing that a tenant might at the expiration of his contract with the landlord claim compensation for certain improvements made by him on the land and might establish his claim to compensation by an easier and simpler method than had theretofore been provided. The act directed that the tenant might, provided he had received the landlord's previous consent, claim compensation for permanent improvements, such as the erection of buildings, laying down of permanent pastures, reclaiming waste land and planting of orchards. He might also claim compensation, with or without the previous consent of the landlord, for such minor improvements as the chalking or marling of land, and planting pasture with clover or other seeds. But in awarding compensation account was to be taken of any consideration already given by the landlord to the tenant for executing the work. An account should also be taken of the inherent capabilities of the soil. The landlord or his agent also was authorized to enter a holding at any reasonable time during the period of the lease to examine the condition of the land and of improvements made thereon. If the landlord and his tenant failed to agree upon a reasonable compensation to be paid the latter, an arbitrator was to be appointed by them or by the Board of Agriculture. Neither party, after the appointment of an arbitrator, was able without the consent of the other to revoke the appointment. The decision of the arbitrator was at the option of either party to be reviewed by the county court and in certain cases by the court of appeals.

Housing of the Working Classes Act.—A law was enacted, receiving royal approval on August 8, which had for its object the extension in England and Wales of the application of that section of the Housing act of 1890 which permitted local or borough councils to acquire lands and to erect and manage model lodging or tenement houses for the working classes. The president of the Local Government Board (really an imperial board under direction of the Home Office), who introduced the amendatory act of 1900, stated that there were two serious objections to the act of 1890 as it then stood. One was that in towns, and more especially in London, it was extremely difficult for the local councils to find building sites within the area of their jurisdiction. The councils ought, therefore, to be authorized to acquire land for lodging houses without the boundaries of their general jurisdiction. The second objection was that the conditions hedged around the acquiring of land by rural councils were so onerous that the permission to acquire land was virtually a prohibition. To remedy these defects Parliament enacted (1) that any municipal local council might, for the benefit of its own district, acquire land and build lodg-

ing houses outside of its district. Or the local council might buy land and lease it, provided that the lessee agreed to erect and maintain lodging-houses thereon. If the local district council failed in its duty, then its powers might be transferred to the County Council (the central municipal authority). In case of a disagreement between the local council and the owner of land as to the price to be given for land acquired by the council, the decision of a single arbitrator appointed by the Local Government Board (the imperial board) was to be final. Parliament also enacted (2) that any rural district council might, with the consent of the general County Council, acquire land for the erection of lodging-houses. In determining whether or not it should consent to this, the County Council was directed to consider the necessity for new accommodations for the working classes within the designated area; the probability for suitable accommodations being supplied by the measures proposed; the liability which would be incurred, and whether, in brief, the scheme was desirable and prudent. In proroguing Parliament the queen said of this act: "The measure you have passed for facilitating the erection of dwellings for the working classes will afford some assistance in the solution of a problem of which the difficulty appears to increase with every succeeding year."

Workmen's Compensation Act.—An act received royal approval on July 30 extending to workmen in agriculture the benefits of the Workmen's Compensation act of 1897. The latter act provided that when employees in factories and mines and on railroad and engineering work were injured or killed in the course of their employment, and through no fault of their own, the employers should compensate them or their dependents to an amount, in the case of death, not exceeding £300, and in the case of injury, in a weekly amount not exceeding £1 or more than 50 per cent. of the workman's regular wage. The act of 1900 provides that the act of 1897 shall also apply to the employment of workmen in agriculture, and by agriculture is meant horticulture, forestry, and the use of land for any purpose of husbandry. If an employer does not hire workmen directly, but agrees with a contractor for the execution of a body of work, the employer is still to be held responsible for compensation to employees injured while in the service of the contractor. Except, however, that if the contractor provides machinery to be used by the employee in threshing, ploughing, and other agricultural work, then the contractor and not the employer is to make compensation for injuries. When a workman is engaged by the same employer mainly for agricultural, but to some extent for other work, then this other work is to be considered as agricultural work also.

Census in Great Britain and Ireland.—Acts providing that the decennial census of Great Britain and Ireland should be taken on Sunday, March 31, 1901, received royal approval on March 27 and on April 9 respectively. In Great Britain the census was directed to be taken under the superintendence of the Local Government Board. Every registration sub-district was to be divided into enumeration districts, and for each of these latter an enumerator was to be appointed. Every enumerator was directed in the week preceding the census to leave at all dwelling houses in his enumeration district schedules to be filled out and returned by the inhabitants. These schedules when returned and corrected, if need be, by enumerators, should show: (1) The name, sex, age, occupation, marital condition, birthplace, and nationality "of every living person who abode in every house on the night of the census day;" (2) those persons who were deaf, dumb, or blind or insane; (3) the number of rooms, when less than five, occupied by any person; (4) in Wales and the county of Monmouth, those persons who spoke Welsh, English, and both; (5) in Scotland, those persons who spoke Gaelic, English, and both. Provision was also made for obtaining the census of persons travelling on the day of the census, and of persons in public or charitable institutions. Returns in the rough were directed to be submitted to Parliament before August 27, if Parliament was then in session, or within the first fourteen days of its session if it should be convened thereafter. In Ireland the enumerators were directed to visit within the week following the census day all dwellings within their respective districts; and to record the age, condition, occupation, and, as was not allowed in Great Britain, the religious profession of the occupants. The enumerators should furthermore record the number of occupied and of unoccupied houses, and the houses building. See the article CENSUS.

Tithe Rent Charges Act.—An act introduced by the attorney-general of Ireland, for the relief of tithe rent-payers in that country, received royal approval on August 8. Tithes were originally free-will offerings made by the owners of land for the maintenance of the church. Later the tithes were made compulsory and were fixed at one-tenth of the yield of the soil. Owing to the difficulty of collecting and handling tithe charges when measured in products tithes were converted into a rent or tax charge payable in money and varying with the market price of corn. Since, as a matter of fact, tenants were often forced to pay the tithe charge, although it properly fell upon the landlords, Parliament in 1891 enacted that owners should thereafter be solely responsible for rent charges, and this notwithstanding any

agreement to the contrary between landlord and tenant. The act of 1900 provides that tithe charges shall from November 1, 1900, be based upon and vary with, not the market price of corn, but the (tenant's) rent which the owner derives from his land. This (tenant's) rent is fixed by the Land Commission, which issues its certificate as to the amount and variation of rents in each county. The act provides that for the fifteen years following October, 1900, and so also with every subsequent fifteen years, the tithe charges payable by the landlord shall vary in accordance with the average variations in (tenant's) rents in the preceding fifteen years.

Merchant Marine.—An act received royal approval on August 6, 1900, further limiting and defining the extent of the liability of ship-owners and others as prescribed by the Merchant Shipping Act of 1894. The act of 1894 limited the liability of the ship-owner to £15 per ton of his vessel's register for claims arising from loss of life, or loss of life and property, and to £8 per ton of register for claims arising from loss of property alone. But nothing in the act limited the ship-owner's liability for damages done to harbors, canals, docks, quays, and the like. By the amended act the limitation of a ship-owner's liability was extended to any loss of property caused by the improper management of a vessel, whether this property was on land or water, fixed or movable. And conversely, when damage was done to a vessel through mismanagement by the owner of any dock, harbor or canal, such canal or dock owner or authority was not to be liable for damages to a greater amount than £8 for every ton of the largest British vessel which had been within the dock, harbor or canal within the five years preceding.

Exportation of Arms.—It having become known that munitions of war were being regularly exported from England to China, and that they had then been or were likely to be used by China against England and the other great Powers, a bill was passed by Parliament and received royal approval on August 6, providing that her majesty might in her discretion prohibit by proclamation the exportation of arms, ammunition, military and naval stores, and any other articles which her majesty deemed to be capable of being converted into or made useful as means or articles of war, to be used against her majesty's forces or against forces co-operating with those of her majesty.

Australian Federation Bill. See article AUSTRALIAN FEDERATION.

South African War.—Upon the conclusion of the queen's speech to Parliament on January 30 the expected debate upon the war, anxiously awaited by the country, took place. In the Commons this debate centred around an amendment proposed to the address to the crown and expressing "regret at the want of knowledge, foresight, and judgment displayed by her majesty's advisers, alike in their conduct of South African affairs since 1895 and in their preparations for the war now proceeding." The Opposition contended that if the government had exercised a conciliatory spirit, the war would have been avoided, and also that the present ill-success of the British arms demonstrated that the government had not taken anticipatory military measures. It also seemed evident to the Opposition that the government had not been informed, as it should have been, of the munitions of war which the Boers had been collecting for years. In reply the government denied in general terms that the war could have been avoided. The government thought, on the contrary, that the Boer government had never intended to make concessions, and that hostilities had, therefore, been inevitable. Lord Salisbury acknowledged that the government had not previous to the war been acquainted with the accumulation of arms in the Transvaal. He pointed out, however, that the British Secret Service fund was a very small one, and that the British constitution was not a sufficient war instrument. The debate continued for several days. Its acrimony and inconclusiveness exasperated the country and occasioned much criticism on the Continent. The incident was practically closed on February 6 by the rejection in the House of Commons, by a vote of 352 to 139, of the amendment censuring the government. On February 7 an amendment was proposed representing "that the time had come when the war in South Africa should be brought to a close on the basis of recognizing the independence of the Transvaal and the Orange Free State." This amendment was defeated by a vote of 368 to 66. The majority of the Liberals, including Sir Henry Campbell-Bannerman, united with the government on this motion.

During the latter part of the session much criticism was directed against the colonial secretary by the Opposition. Mr. Chamberlain was indirectly accused of being interested in companies which were contractors for war material, and special stress was laid upon the cordite furnished by Kynochs, of which company Mr. Arthur Chamberlain, brother of the colonial secretary, was manager. Mr. Chamberlain denied that he knew anything about these contracts, and stated that he could not be held responsible for the business affairs of his relations. On July 25 a debate took place on the proposition to reduce the salary of the colonial secretary as a means of expressing the disapproval of the House. The issue at that time raised was as to whether the punishment which the colonial secretary had decreed



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NINE LEADING OFFICERS OF THE BRITISH ARMY.—1. Lieutenant General Sir Frederick Forestier-Walker, Commanding at Cape Town. 2. Major General Lord Kitchener of Khartum, Chief of Staff to Lord Roberts. 3. General Sir William Lockhart, Commander in Chief of the Indian Army. 4. Lieutenant General Sir William Butler, Commanding the Western District in England. 5. Lieutenant General Sir Charles Warren, Commanding the Fifth Division in South Africa. 6. Major General Sir Henry Colville, Commanding the First (Guards) Brigade in South Africa. 7. Major General Sir Charles Holled Smith, Commanding the Australian Contingent in South Africa. 8. Lieutenant General Sir George Stewart White, V.C., Commanding at Ladysmith. 9. Lieutenant General John D. P. French, Commanding the Cavalry Division in South Africa.

for the rebels in South Africa was excessive. This punishment was disfranchisement for five years. The government held that the punishment was not excessive, especially as the administration had declared that at the earliest possible moment it would give self-government to the South African republics, similar to that which was enjoyed by all the other British colonies. The proposition to reduce the secretary's salary was defeated by 208 to 52, Sir Henry Campbell-Bannerman and other Liberals declining to vote with the Opposition. There was much discussion during the session as to what measures should be taken to improve the efficiency of the army. (See paragraph Army Reorganization.) On February 20 the Earl of Wemyss moved that "the ancient constitutional law of compulsory military service for home defence be at once so amended that it might be available to put in force in such modified form as would effect its purpose without weighing unduly on the people." The government objected to this proposal on the ground that the volunteer system had not yet shown itself entirely inadequate, and that balloting for service, as was proposed by the earl, would lead inevitably to conscription; and that Great Britain had so far held aloof from conscription, which, if put in force at this time, would induce a reactionary feeling regarding the war, which would be especially disadvantageous in view of the operations in South Africa. The proposal of the earl was, therefore, not accepted. On August 8, however, an act received royal approval to increase the usefulness of the volunteers in case of national danger. Under the old act of 1863 volunteers could be called out for home service only "in case of actual and apprehended invasion of any part of the United Kingdom." For this clause was substituted "in case of imminent national danger and great emergency." The object of this clause was to permit the volunteers to be called out under less stringent regulations than those which applied under the old act. Another clause which was added provided that "it shall be lawful for her majesty to accept the offer of any member of a volunteer corps to subject himself to the liability to be called out for actual military service at any time for purposes of coast defence at such places in Great Britain as may be specified in his agreement." By this clause it was thought that a considerable number of men would be prepared at any time to enter upon military service and to hold themselves in readiness for the same when the regulars had been sent abroad. One of the great deficiencies found in the military system when the war with South Africa broke out was the fact that as soon as the regulars and a few bodies of militia had been sent abroad, the country was practically stripped of all military units for home defence. By this volunteer act the government would be able to rely upon several volunteer units without alarming the country by proclaiming that a time of national danger and great emergency had arrived. Moreover, this act would not be onerous upon the volunteers, because it was left optional to them whether or not to subscribe to the clause offering their services.

Extraordinary Session of Parliament.—An extraordinary session of Parliament was called on December 6 to sanction the grant of additional money for causes arising out of the South African War. The queen's message, which was unusual for brevity and lack of formality, said in effect: "I have summoned you to hold a special session, in order that you may make further provision for the expenses incurred by the operations of the South African War. You will not enter into other public matters requiring your attention until the ordinary meeting of Parliament in the spring." The supplementary grant asked for and given in the Commons by a vote of 284 to 8 was £16,000,000. The chancellor of the exchequer stated that unused borrowing powers conferred upon him at the last session would enable him to raise somewhat over £5,000,000 of the required amount. He, therefore, asked Parliament to authorize him to raise £10,000,000 more by a war loan, exchequer bonds, or treasury bills. This request was granted, and Parliament adjourned on December 15. The session was remarkable for the sharp attacks made upon the government by the Opposition. In reference to the dissolution of Parliament and the general elections, the Opposition claimed that the government had dissolved Parliament at precisely the time when it was thought that enthusiasm for the success of the British arms in South Africa was at its highest. At this time also a large number of voters had been excluded, on account of the state of the registers, from voting. The Opposition also objected seriously to the allegations made by the Conservatives to the effect that every vote cast for the Liberals was a vote given to the Boers. Lord Salisbury, pressed for a reply, stated that the fall was a good time to hold elections, because in the summer the members were busy in session, and in the winter the voters would get their feet wet going to the polls. A considerable portion of the session was taken up by attacks upon Mr. Chamberlain, the colonial secretary. The Opposition, while disclaiming any imputation upon Mr. Chamberlain's private character, considered that both he and his relatives were interested in too many companies having business relations with the government. If this were allowed to stand as a precedent, it might later be used by other persons to justify corruption. Mr. Chamberlain in replying said it was his personal honor which was

involved and intended to be attacked, and not any question of abstract principle. He thought it hard after twenty-five years of life in the full light of Parliament to have to stand up and explain that he was not a "scandalous thief." He added that while the honor of his relations was above suspicion, still, if it were not, he could in no conceivable way be held responsible for their business transactions. The Opposition also made objection to the fact that one-fifth of the cabinet were members of the prime minister's family. The Opposition thought that the efficiency of the cabinet was thereby reduced, because the opinion of Lord Salisbury would be likely to have too great weight with men related to him. Mr. Balfour, in replying, said that it was hard that an unfortunate accident of birth should prevent a man from holding office. The *Standard* (Cons.), in summing up the matter, said: "We could have wished that Lord Salisbury had been able to obtain more talent outside of his family circle, and that Mr. Chamberlain held no shares in any public company to which government contracts are given."

The Queen and the War.—The power of the queen to arouse and maintain patriotic feeling in regard to the war in South Africa and to draw closer the bonds of empire was strikingly illustrated during the year. Hardly a week passed in which the queen did not visit some hospital of army invalids, review returning or departing troops, or write notes of congratulation or condolence to army divisions or individuals. What could not be done by the War Office or by any other person in the United Kingdom was done graciously and effectively by the queen. The following note, signed by the queen's private secretary, may be taken as an example of many made public during the year: "The queen is much grieved to hear of the terribly sad case of the death of Mrs. Armstrong through the shock of hearing that her husband had been killed at Magersfontein, and her majesty is concerned at the painful circumstances of the three little orphans. I should be greatly obliged if you will be good enough to let me know what success attends your efforts to get the two elder children put into an orphanage and to find an adopted home for the infant boy. The queen is desirous of knowing what is definitely settled." Very little connected with the war missed the queen's personal attention. When the Canadian contingents sailed her majesty sent them godspeed; and when Bugler Dunn returned from South Africa he received audience with the queen, and was given a new bugle, "presented by Queen Victoria to replace the bugle lost by him at the battle of Colenso, where he was wounded." But the most important of all these acts of the queen was her visit to Ireland, lasting from April 4 to April 26. The queen had received news of the efficiency of the Irish troops in South Africa, and she determined to testify her gratification in a lasting manner. On March 7 the Shamrock, which had been denied to the Irish troops to their constant irritation, was ordered to be worn by them all on every succeeding St. Patrick's day "as a distinction," to commemorate the gallantry of the soldiers in the war. On the same day the queen startled the country by announcing that she had abandoned her projected trip to the Riviera, and would go instead to Dublin. The queen's last visit to Ireland had been in company with the prince consort in 1861. When the prince died many municipalities there had declined to pass a vote of sympathy, and Dublin refused to grant sites for statues which private citizens wished to erect and pay for. The queen's resentment was known to have been very deep. And, therefore, this visit, on her own initiative after thirty-nine years' absence, was a testimonial which could not fail to touch the Irish people, irrespective of party. On April 4 the queen went by carriage from Kingstown to Dublin. The applause with which she was greeted was swelled to a "fervor of enthusiasm" when it was seen that she wore a sprig of shamrock. On entering Dublin, the queen's apt and womanly greeting to Ireland was read, as follows: "I come to this country to seek change and rest and to revisit scenes which recall to my mind, among thoughts of the losses which years must bring, the happiest recollection of the warm-hearted welcome given to my beloved husband and children. I am deeply gratified that I have been able at this time to see again the motherland of those brave sons who have recently borne themselves with a cheerful valor, as conspicuous now as ever in their glorious past." During her stay the queen inspected the soldiery, visited the schools, convents, and orphanages, and nearly every day drove about Dublin to see the people. No effort was made by either Unionist or Nationalist to give the visit political significance. The Nationalist papers generally, while avowing their enduring discontent with the imperial government, expressed admiration and loyalty to the person of the queen, and were heartily glad that she had come to Ireland. In one way, however, it could not be considered that the queen's visit was without political effect. As the *London Times* said: "It has been left for the feminine instinct of the queen to prove the success of governing Ireland through the affections and imaginations of the Irish." The queen was evidently much pleased with the loyal addresses, deputations, and unbounded applause with which she was received. On leaving she announced that she desired to present the city with a piece of plate in remembrance of her visit, saying that during the three weeks she had spent in that charming place

she had been received by all ranks and creeds with an enthusiasm and affection which could not be surpassed.

Army Reorganization.—Much discussion took place during 1900 in Parliament (see paragraphs Parliament and South African War) upon the need of radical reform in the army organization and War Office. The Boer War put the military system of England to a practical test, and the system failed to meet the test. The disasters that marked the opening of the war served to reveal the inefficiency of generals in the field and of officials at home; the extraordinary efforts the country was forced to exert to conquer an enemy so disproportionately weak as the Boers raised grave fears as to what the issue would be if a conflict should arise with one of the great Powers; the necessity of draining the country of regular soldiers and of nearly every able-bodied man who could shoot and was willing to, brought up vividly the possibility of a foreign invasion and the utter unfitness of the citizen soldiery to repel such an attack.

To understand the weight of the criticisms advanced and the importance of the reforms proposed, some knowledge of the British military organization is necessary. At the head of the administrative system is the secretary of state for war, to whom the heads of all departments are responsible. Under him is the army board, consisting of the commander-in-chief, the adjutant-general, the quartermaster-general, the inspector-general of fortifications, and the inspector-general of ordnance, each the chief of a separate department. The commander-in-chief, the most important of the departmental heads, has charge of the plans of mobilization and the conduct of operations, and is the secretary's principal adviser. The national forces of Great Britain are made up of the regular army, the army reserve, the militia, the yeomanry, and the volunteers. The regular army, according to a traditional principle, is destined only for foreign service; and, therefore, the regular forces at home are intended merely to supply drafts for the army abroad. The defence of the country is left to the reserve and the auxiliary *corps*. The reserve consists of men who have served their time with the colors, and may be recalled to active duty, as is provided in their contract of enlistment. The militia, in case of imminent danger, may be employed with the regular army at home or in the Mediterranean. The yeomanry are an ancient *corps* of mounted men, possessing a peculiar organization of their own. The volunteers are subject to service at home in times of national peril, and may not be sent abroad. At the beginning of 1900 the regular home army of England numbered 176,000 men, the army reserve was estimated at 90,000, the militia at 136,000, the yeomanry at 12,000, and the volunteers at 265,000. These were the figures; the need of reinforcing the regular army in South Africa brought out the facts. It was discovered that the militia, yeomanry, and volunteers were available for the greater part only on paper. Out of 500,000 supposed effectives, the nation at a time of pressing necessity could pick out only 15,000 militia and about 22,000 yeomanry and volunteers for foreign duty. (See TRANSVAAL.) The rest, for lack of training and organization, were not fit to take the field; and though the militia was all embodied and sent into camp, it was recognized that the country at the time was practically drained of fighting men. Defeat abroad, then, and complete disorganization at home elicited the bitterest criticism of the War Department; the *Times* declared that the whole military system had broken down. Blame was laid on every part of the service from the men of the rank and file to the secretary of state for war. The total ineptitude of the volunteers and militia was ascribed to lack of training and drill. The men could not shoot. "I may quote an instance," says a writer, "that came under my own observation some years ago, when I was with a brigade that took over new ranges. The firing was at large mantlets, and commenced at one thousand yards, from which point the men advanced, firing up to five hundred yards. Fully one hundred thousand rounds of ammunition were expended, all in volley firing, and the total number of hits was well under one hundred! This was in the peace field at large marks, when no enemy returned the fire to disconcert the men and make their aim shaky." Nor were the officers better than the men. On August 16 Lord Wolseley, who had come down to Aldershot to review the troops on a field day, was moved to say that he had refrained from coming down before so that he might give the Aldershot commanders plenty of time to get their men into shape. Yet it was plain that the army then was totally unfitted, by reason of insufficient teaching, to take the field. That they must learn to walk before they could run was evident; and so for the present no more field days would be held, but individual battalion commanders must devote all their attention to teaching their men the primary lesson of their calling—company work and battalion work. Nothing larger than brigade movements should be attempted until the men had had a thorough teaching. Without wishing to be too critical, it was necessary to impress on all battalion commanders that they could not go down too low in the scale of instruction in getting their men thoroughly trained to take the field. They must properly instruct their captains, and the captains must instruct the men to make the early training of

the soldier successful. Responsibility for this state of affairs was ascribed to the War Office, to the commander-in-chief, who had the supervision of the mobilization of troops, and had shown himself unable to mobilize, and the adjutant-general, who was charged with the training and disciplining of troops, and had neither trained nor disciplined them. The other departments presented faults just as glaring. The Bureau of Military Intelligence displayed profound ignorance of the situation in South Africa, of the Boer strength, of the scene of campaign, and of the probable duration of the war. The inspector of ordnance allowed the army to take the field with inadequate artillery, guns forty years old, too slow for modern use, too heavy for the country they were to be used in; so that Ladysmith was saved only by the naval guns rushed there from the fleet. The quartermaster-general left Buller's corps without adequate train or transport, forcing it to cling to the railways or lines of communication. The medical service at the beginning of the war was conspicuously inefficient; and experts declared that epidemics of typhoid fever could have been prevented if the necessary supplies had been forthcoming. This disorganization of the War Office was ascribed by one party to the fact that it was ruled and administered by civilians. The five departmental heads, possessing independent access to the secretary, acted without harmony, often in opposition, and their civilian superior did not possess the necessary technical knowledge to co-ordinate their activity or to check it if wrongly directed. Centralization had been carried to an excessive degree; affairs of detail in the administration of the various military districts of the country were managed by the War Office, delay, neglect, and inefficiency consequently resulting. The crying need, it was claimed, was the placing of the War Office work in charge of a permanent military committee, modelled after the plan of the general staff of Germany or France, free from civilian interference, and entrusted with powers similar to those possessed by the general staff of continental nations. On the other hand, it was maintained that the machinery of the War Office was not in itself responsible for the grave mistakes made, but that this was in large measure the fault of Lord Wolseley, the commander-in-chief, who had left many of his duties unperformed; and it was pointed out that the powers of a commander-in-chief were ample enough to permit the most influential and beneficent action on the part of an energetic and able general. However, it was recognized at the end of the year that there was need for improvement in the administrative and every branch of the service; and a committee was appointed by the secretary of state for war to consider, among other things, the question of the distribution of functions between the civil and military departments, of granting larger powers to the military district authorities, of substituting military for civil clerks in the War Office, and of making the office independent of civil control. The replacing of Lord Wolseley by Lord Roberts was generally regarded as the beginning of a practical reform in the administration of the War Office and of the army organization that would, perhaps, obviate the necessity for radical theoretic change in the system.

General Elections.—The issues and outcome of the general election held in England in October, 1900, pursuant to an order of the queen in September dissolving Parliament, presented several features common to the American Presidential election held in November. In both countries a united party in power opposed a disorganized party out of power; in both the main question, embracing various minor ones, was whether the existing governmental policy, domestic and foreign, should be sustained or reversed; in both the party holding the reins depended as much on the weakness of their opponents as on their own record and assurances for the future; and, finally, in both countries the party in power was returned, contrary to precedents of long standing, by which the electorate had regularly vacillated. In America this vacillation had been exhibited by a regular political "turn about" every four years in New York State, and by the fact that a defeated candidate for the Presidency had almost always won the office the second time running. In England the vacillation had been shown by the regular defeat, upon the dissolution of Parliament, of the party in power. But the issues upon which this precedent was reversed were much simpler in England than in America. There were in England no domestic questions of really capital and pressing importance. All matters of especial interest to the country centred in the conduct and outcome of the war in South Africa and in the best measures to be taken to prevent any recurrence of the outbreak and to safeguard England's fortunes more thoroughly than had been done in case of any other foreign war. The issue as thus presented was not cogently offset by any counter-issue, so that the question presented for decision by the electors was simply to which of the two parties the task should be given of carrying out the British military and territorial programme. To the favor of the electorate the Unionists, the party in power, had both inherent and derived claims. Their inherent claim lay in the fact that the war had, in fact, been prosecuted and pushed to a practical conclusion by them, and that they were, therefore, entitled to make the settlements and readjustments consequent upon it. Their derivative claim lay in the dissensions of the Liberal party, in

which was found nearly every variety of feeling regarding the war, and from which, therefore, no united or continuous party action could be expected. As an example of the disagreements within the Liberal party, the following typical expressions of Liberal leaders may be quoted: Mr. Bryce. "The government of this country was much more to blame than the Boer government." Sir William Harcourt. "With fair and moderate management war might have been averted." Mr. Asquith. "The war might and could have been avoided by President Kruger." Sir Henry Fowler. "The war was just and necessary to her majesty's government, and could only have been prevented 'by trailing the British flag in the mire of dishonor and by a policy of humiliation, surrender, and scuttle.'"

In the campaign which followed the dissolution of Parliament the Unionists based their claims to continuation in power mainly on the following points: 1. The war had been forced upon the government by a corrupt oligarchy, headed by President Kruger. 2. While, as proved by events, the government had not been entirely prepared for the war, it had taken all the precautionary and defensive measures advised by the highest military experts. 3. The war had been vigorously prosecuted, and would result in the annexation of the South African republics as two self-governing colonies. 4. The measures of army reform suggested by the events of the war would be promptly put into execution. 5. A large number of useful domestic measures had been placed upon the statutes. 6. The Liberals, because of their internal dissensions, the lack of support which they had accorded the government during the war, their disorganized condition, and their general uselessness, should not be entrusted to the grant of power which the Unionists were entitled to through their patriotism and because they had actually conducted the war and brought it to a practically successful conclusion. The Liberals, while not presenting any solid front as to the justice and expediency of the initiation of the war, did practically agree upon the following points: 1. That the government had maintained a grossly inefficient war office, and had as a result been totally unprepared for the war. 2. That the war had been conducted in a very slovenly manner. 3. That if the Unionists had been intending to introduce efficient measures of army reform, they could have initiated them long before, and that it was absurd at that time for the Unionists to come forward, claiming that these army reforms were about to be initiated. 4. That the domestic legislation which had been enacted was unimportant, and that the great questions of temperance and the housing of the working classes had been deliberately neglected by the party in power. 5. That the Unionists had called for the elections at a time when the people were carried away by a fever of patriotism, and that mainly upon this fact the Unionists relied; that the electoral lists had not been revised, and that it was little short of scandalous for the Unionists to press for a vote under these conditions of an inadequate electoral list and a flamboyant patriotism. 6. That Mr. Chamberlain was a just object of criticism. On this last subject the Unionists agreed well, and the campaign speeches were filled with unfavorable allusions to the personal and public actions and personality of the colonial secretary. It was said that Mr. Chamberlain's headstrong temperament had been the dominant factor in bringing about the war, and it was intimated that his financial relations with business firms that were contractors to the admiralty left little to be desired in the way of a corrupt appearance. Mr. Chamberlain, indeed, was the most prominent figure in the campaign, the actions of Lord Salisbury being little remarked upon. Several of Mr. Chamberlain's speeches, in which he was reported to have said in effect that a vote given to the Liberals was a vote given to the Boers, did not tend to allay Liberal irritation or to diminish their disparaging remarks.

Result of Parliamentary Election.—The result of the election was to return the Unionist party into power with a total majority of 134. This majority was 18 less than that gained by the Unionist party in 1895, but was, with that exception, the largest majority obtained by either party since 1832. The returns were: Conservatives, 332; Liberal Unionists, 70, or a total for the government of 402; Liberals and Labor members, 186; Nationalists, 82, or a total for the Opposition of 268. In Great Britain the Unionists obtained (Conservatives, 315; Liberal Unionists, 66) 381 members, and the Opposition (Liberals, 185, Nationalists, 1), 186. In England the Unionists obtained (Conservatives, 293; Liberal Unionists, 46) 339 members, and the Opposition (Liberals, 125; Nationalists, 1), 126. In Wales the Conservatives obtained 4 members, and the Liberals, 26. In Scotland the government obtained (Conservatives, 18; Liberal Unionists, 20) 38 members, and the Liberals, 34, thus giving a majority to the Conservatives for the first time since 1832. In Ireland the government obtained (Conservatives, 17; Liberal Unionists, 4) 21 members, and the Opposition (Liberals, 1; Nationalists, 81), 82 members. The following table shows the strength of the two parties before Parliament was dissolved and after the election. In this table C. = Conservatives, L. U. = Liberal Unionists, L. = Liberals, and N. = Nationalists. The latter two are the Opposition parties, while the former two

constitute the "government" party on matters connected with foreign policy, and especially in regard to the South African War.

	Dissolution, 1900.					General Election, 1900.				
		C.	L.	U.	L. N.	C.	L.	U.	L. N.	
ENGLAND—										
London	62	51	2	9	..	53	1	8	..	
Boroughs	164	98	21	44	1	104	20	39	1	
Counties	234	138	24	72	..	133	23	78	..	
Universities	5	3	2	..	..	3	2	..	..
WALES—										
Boroughs	11	5	1	5	..	3	..	8	..	
Counties	19	2	..	17	..	1	..	18	..	
SCOTLAND—										
Burghs	31	5	7	19	..	6	10	15	..	
Counties	39	12	5	22	..	11	9	19	..	
Universities	2	1	1	..	..	1	1	..	..
IRELAND—										
Boroughs	16	4	1	..	11	5	1	..	10	
Counties	85	12	2	1	70	11	2	1	71	
Universities	2	1	1	..	..	1	1	..	..
Total	670	332	67	189	82	332	70	186	82	

Net Unionist gain.....	3
Counting on a division.....	6
Increasing Unionist majority of 128 in the last Parliament to.....	134

In commenting upon the results of the election, the British press pointed out that the larger towns and the most prosperous districts generally were those which had returned the largest Unionist majorities. It was only in Ireland and in the smaller communities and in those less in touch with affairs that the Liberals had won largely. It should be remembered, moreover, that the two factions of the Liberal party in Great Britain had avowedly opposed each other on the subject of the justice of the war. That faction whose representatives were known as Little Englanders was uniformly defeated, and it was only the imperialistic section, led by Sir Henry Campbell-Bannerman, which had saved the whole party from total overthrow. It was this imperialistic section which practically disavowed the Home Rule doctrine advocated by Mr. Gladstone in 1885. Since that time the Liberal party had steadily disintegrated, and it was thought that to regain its position it must rid itself of "doctrinaire theories" and a position opposed to England's greatest advancement as a colonial and industrial nation. Such a regeneration of the party was to be greatly desired, because without a strong Opposition the Conservatives would have no check, and would, consequently, be liable to commit themselves to injudicious and hazardous policies.

Colonial Policy. See COLONIES.

GREECE, a kingdom of southeastern Europe, has an area of 25,014 square miles and a population (1896) of 2,433,806. The country was divided on January 1, 1900, into twenty-six nomarchies or provinces, included under the four general heads of northern Greece, Peloponnesus, Thessaly, and the Grecian islands. The largest towns are Athens, with a population (1896) of 111,486; Piræus (the port of Athens), 42,196; Patras, 37,958; Trikkala, 21,149; Corfu, 17,918; Hermopolis, 17,894. The Greek Orthodox Church is the national religion, and embraces over 90 per cent. of the population. All creeds are tolerated, the most numerous of the non-orthodox inhabitants being: Other Christians, about 15,000; Moslems, about 25,000; Jews, about 6000. Education is compulsory between the ages of 6 and 12, but the law is inefficiently executed, the proportion of illiterates being estimated at about 30 per cent. of the population. In the beginning of 1898 there were 2874 primary schools, with 158,249 pupils, 264 secondary schools, with 15,739 students, and 40 gymnasia, with 3986 students. In 1899-1900 the University of Athens was attended by 2802 students, of whom 815 were foreigners. Only 33 per cent. of the soil is cultivated, and only 7 per cent. is under cereals. Owing to antiquated methods of cultivation, agriculture is not in a very flourishing state. The chief products are cereals, including wheat, barley, rye, maize, and mezzlin; currants, olives, grapes and figs, cotton and tobacco. In 1898, 40,101,000 gallons of wine were produced, of excellent natural quality, but spoiled by the Greek custom of mixing resin with the wine. In 1899 the yield of olive oil was 3,513,791 gallons. The currant crop is the most important of all agricultural products, and forms the chief article of export. In 1898, 153,000 tons were produced, in 1899, 152,200 tons. In 1900 crops were uniformly bad, and currants showed a tremendous falling off. In some provinces 75

per cent. of the crop failed, and the entire yield for the year was estimated at 58,000 tons, about one-third the average annual crop. Ores are found in plenty, the principal ones being manganese, iron, zinc, speiss, lead, magnesite ore, silicate of magnesia, barite, sulphur, emery, and gypsum. The total amount of ore mined in 1898 was 713,000 tons, of the value of 21,324,913 drachmæ (drachma = 19.3 cents). Commerce in 1899 showed a considerable decline from the figures of the preceding year. The striking increase of imports in 1898 was not really due to a greater degree of prosperity in the country, but was a natural result of the Turkish war, which had partially paralyzed importation in 1897 and drained the country of necessities. In 1899 imports and exports returned to their normal state. In 1897 the imports amounted to 114,670,000 drachmæ, in 1898 to 152,280,000 drachmæ, in 1899 to about 125,000,000 drachmæ; during the first half of 1900 to 56,789,120 drachmæ. The exports for the same period were 80,730,000 drachmæ, 89,430,000 drachmæ, 90,132,000 drachmæ, and 37,360,900 drachmæ. In 1900 the United States imported \$1,097,504 worth of goods from Greece, and sent back merchandise to the value of \$327,569. The chief articles of import are cereals, textiles, coal, and raw materials, wood and timber, fish, chemicals, and live-stock. The principal exports are currants (42 per cent. of total exports), ores, wines, olive oil, figs, and tobacco. The trade is shared by foreign countries in approximately the following proportions: Great Britain, 28 per cent.; Russia, 16 per cent.; France, 9 per cent.; Austria, 8 per cent.; Turkey, 7 per cent.; the United States, $3\frac{1}{2}$ per cent. In 1899 the entries in Greek ports comprised 6092 ships of 3,506,237 tons, and the clearances, 5885 ships of 3,500,306 tons. In 1898 the merchant fleet consisted of 159 steamers of 105,684 tons, and 1175 sailing vessels of 186,413 tons. At the beginning of 1900 there were 641 miles of railway, and in 1898, 5176 miles of telegraph line.

Economic Development.—The war with Turkey greatly stimulated industrial activity in Greece. M. Theotoki, minister of interior, and especially M. Simopoulo, minister of finance, have displayed fine ability in recognizing the needs of the country and in taking measures for satisfying those needs. Two very important undertakings were initiated in 1900, which must prove of great benefit to the country. On March 22 a convention was signed with the Eastern Railway Construction Company for the building of a railroad from Athens to Demerli in Thessaly, eventually to be extended to the Turkish frontier and to be connected with the great trunk lines from Constantinople to western Europe. The government was authorized to negotiate a loan of 45,000,000 francs at 5 per cent. for this purpose. The service of the loan was put into the hands of the International Commission, which is to pay the interest on the loan from its surplus funds. Branches are to be built to Chalcis, on the island of Eubœa, and to Lamia in Phthiotis. Work is to begin, according to the contract, three months after the cessation of fighting in the Transvaal. A second line of railway was decided upon that should cross the Peloponnesus from the northwest to the southeast, starting at Pyrgos in Lower Elis, passing through Meligala in Arcadia, and terminating at Kyparissi on the coast of the Ægean. A loan of 11,700,000 francs was voted for this purpose.

Finance.—The finances of Greece are in great measure under the control of the International Commission of the Six Powers, appointed after the war of 1898 for the purpose of administering and liquidating the national debt, which, external and internal, amounted to 1,020,035,177 drachmæ. To liquidate this external debt, the tobacco duty, the stamp duty, the customs of the Piræus, and the income from government monopolies were assigned to the International Commission, which collects the revenue through the *Société de Régie des Revenues*. In other branches of revenue the government is independent of the commission, which has no right to check expenditure unless they consider the interests of creditors to be jeopardized. The budget for 1898 showed a revenue of 102,759,353 drachmæ, and an expenditure of 101,988,039 drachmæ; for 1899 the estimates were 107,085,658 drachmæ income and 103,418,273 drachmæ expenditure; for 1900, 112,206,847 drachmæ income and 112,049,280 drachmæ expenditure. For 1901 the revenue was estimated at 114,000,000 drachmæ, and the expenditure at 111,000,000 drachmæ. The chief sources of revenue are duties and excise, direct taxes, stamps and dues, and monopolies. The principal items of expenditure are the interest on the public debt, war, navy, interior, pensions, and justice.

Army and Navy.—Military service is obligatory on all citizens above the age of 21. The terms of service are 2 years in the standing army, ten years in its reserve, 8 years in the national guard, 10 years in its reserve. The active army in 1900 consisted of 25,180 officers and men; the war footing was 88,125 men. The territorial army is estimated at 96,000 men, called out only in case of extreme necessity. The navy contains 5 rather antiquated armor-clads, three of them of 4885 tons, 2 unprotected cruisers, 2 corvettes, 12 gunboats, and 17 torpedo boats.

Government.—Greece is a monarchy under a constitution adopted in 1864, which vested the legislative power in a Boulé or chamber of 207 representatives, elected for

four years by manhood suffrage. The present king, George I., second son of the King of Denmark, was elected in 1863 after the expulsion of King Otho. The king's council consists of the ministers of interior, foreign affairs, finance, justice, war, navy, and worship and instruction.

HISTORY.

Political Affairs.—At the end of 1900 the Theotoki cabinet was still in office, but was weaker than it had been at the beginning of the year, when it rested on a strong, Tricoupistic majority, and had the support of the independents in the chamber. The bad crops of the year did much to create dissatisfaction with the ministry, and it was asserted unjustly that the ministers had neglected the duties of their office. Personal squabbles among the different members of the cabinet also tended to weaken the government. But the chief sources of discontent were the failure to introduce new tribunals and the toleration of abuses in the administration of the courts. Justice in Greece is in a deplorable condition, because politics are allowed to influence the courts. Reform had been promised by the cabinet, but was not carried out. Two changes in the *personnel* of the ministry occurred during the year. Tsamados, president of the chamber, succeeded Eutaxias as minister of worship and instruction, and Stais succeeded Koumoundouros as minister of war. Koumoundouros's resignation was caused by charges of inefficiency and peculation. The most important feature of the year's legislation was the law making the crown prince absolute head of the army, and vesting in him full power to reorganize the national forces. Politics had spread among the ranks, and had made the soldiers disaffected and the officers openly rebellious. To separate the army from politics it was found necessary to intrust the chief command to one who was above the influence of party spirit. The liberals in the chamber declared that such absolute power was unconstitutional, and debated the question fiercely, but the measure was passed by a large majority.

Foreign Affairs.—Disagreements arose between the government and Turkey concerning a clause in the treaty of 1898. This article provided that as soon as possible a convention should be signed between the two countries re-establishing consular relations and defining the status of Greeks in Turkey. The Porte showed little inclination to proceed to an agreement, and threw obstacles in the way. In Greece bitter feeling was aroused at the action of Turkey, and the importance of the question forced it on the attention of the ministers. Remonstrances were made to the Six Powers at Constantinople, and the settlement of the dispute was expected at the end of the year. The feeling of expansion is strong in Greece. To the north the country looks longingly toward Albania, and to the south toward Crete. Panhellenists agree that Albania is physically a part of Greece, that both peoples are in great part of the same race, that there exists between them a community of language, religion, and, above all, interest. Forcible annexation being out of the question, Greece has adopted the policy of complete subserviency to the dictates of the Six Powers for the purpose of gaining their good will and acquiring, when Turkey is divided, its coveted share of the spoil. In Crete (*q.v.*) the inhabitants are not at all as anxious to be annexed to Greece as the Greeks are to annex them. Though a loose union with the Hellenic kingdom is not objectionable, the Cretans are too well governed now to risk any abrupt change of rule. Late in December Prince George returned from a journey to western Europe, made for the purpose of obtaining the consent of the Powers to the establishment of Crete as an independent state. His mission was a complete failure. The Powers unanimously refused countenance to such an undertaking, and Germany, which in return for concessions in Asia Minor had become the best friend of Turkey, showed itself especially hostile to Prince George's plans. For archæological exploration in Greece, see *ARCHÆOLOGY*.

GREEK CHURCH, as a whole, includes an estimated membership of 98,016,000, of which 80,000,000 are inhabitants of the Russian Empire. An event of the past year that has attracted some attention has been the excommunication of Count Leo Tolstoy from the Russian Orthodox Church. Count Tolstoy for years has been only nominally a member of the church, as his expressed religious views have been contrary to the orthodoxy maintained by that body; but in his late novel, *Resurrection*, a climax was reached in an open attack on all Christian orthodoxy.

The Greek Church in the United States shows considerable progress during 1900 in both its branches. **GREEK ORTHODOX CHURCH**, the national church of the kingdom of Greece, has 20,000 members, 4 ministers, and 4 churches in this country. **RUSSIAN ORTHODOX CHURCH**, with 58 churches, 41 ministers, and 45,000 members, is controlled by the Holy Synod at St. Petersburg.

GREEN, WILLIAM HENRY, D.D., LL.D., professor of Oriental and Old Testament literature in Princeton Theological Seminary, died February 10, 1900. He was born at Groveville, N. J., January 27, 1825, and graduated at Lafayette College in

1840 and in 1848 at Princeton Theological Seminary, where from 1846 to 1849 he also acted as instructor in Hebrew. In the latter year he became pastor of the Central Presbyterian Church of Philadelphia, remaining there until 1851, when he accepted a call to the chair of biblical and Oriental literature in Princeton Seminary. In 1859 his professorship was changed to Oriental and Old Testament literature, a position he retained to the time of his death. Professor Green was chairman of the American Old Testament committee, and in 1891 was moderator of the Presbyterian general assembly. He was regarded as a theological scholar of the old school. His writings include: *A Hebrew Grammar*; *An Elementary Hebrew Grammar*; *The Pentateuch Vindicated from the Aspersions of Bishop Colenso*; *Hebrew Chrestomathy*; *The Higher Criticism of the Pentateuch*; *The Argument of the Book of Job Unfolded*; *The Unity of the Book of Genesis*; *The Hebrew Feasts*; *Moses and the Prophets*; *A General Introduction to the Old Testament*.

GREENLAND, a Danish island, situated northeast of North America. It has an estimated area of 46,740 square miles, and its population was given in 1890 as 10,516, of whom 309 were Europeans and the rest natives. The capital is Godthaab, situated on the west coast, not far from the sixty-fourth parallel. The interior of Greenland is mostly covered with ice, and only parts of the coast in the south and west are habitable. The trade constitutes a monopoly of the Danish government. In 1898 the exports to Denmark amounted to 401,000 kroner, and the imports from that country were valued at 703,000 kroner. The chief articles of export are whale and seal oil, seal, fox and reindeer skins, feathers, eiderdown, and cryolite.

GRENADA, forming with St. Lucia and St. Vincent the British colony of the Windward Islands, has an area of 133 square miles and a population of 63,000. St. George, the capital of the Windward group, has 5000 inhabitants. In 1898 there were 38 government schools, with 8386 pupils. The island is administered by the governor of the colony, aided by an executive and a legislative council. Of 20,418 acres under cultivation, the greater part is devoted to cocoa, cotton, and spices. The forests abound in mahogany and other precious woods. The exports in 1899 were worth £267,738, and the imports, £226,829, the value of the cocoa exported being £244,611, and of spices £21,761. The revenue in 1899 amounted to £68,757, and the expenditures £59,359. The public debt was £127,670. The shipping engaged in foreign trade amounted in 1898 to 434,198 tons.

GRENADINES, a group of small islands included in the British colony of the Windward Islands, lying between St. Vincent and Grenada, have an area of 8462 acres and a population of about 6400. Some of the Grenadines are subordinate to St. Vincent and some to Grenada. All but a few hundred of the inhabitants live on the largest island, Carriacou, which has an area of about 10 square miles and a population of 6031.

GRIMAUD, ÉDOUARD, chemist, and president of the Société Chimique de Paris, died in France, May 5, 1900. In addition to his reputation as a chemist, M. Grimaud was noteworthy as being somewhat involved in the Dreyfus case, and at the Zola trial he expressed his belief in the innocence of the condemned officer. He was born July 3, 1835, at Rochefort, Charante-Infer, and was a professor in the École Polytechnique and the Agronomic Institute. On account of his sympathy with Dreyfus he was deprived of his chair by General Billot, in spite of his services in the French army in 1870. He was the author of a number of papers on organic chemistry and also of a biography of Lavoisier, published in 1884.

GROSVENOR, Colonel WILLIAM MASON, well-known financial writer of New York City, died at his home, Englewood, N. J., July 20, 1900. Born at Ashfield, Mass., April 24, 1835, he spent three years at Yale College, and at 19 years of age became editor of the New Haven *Palladium*. When the Civil War broke out he went to the front with a Connecticut regiment, and later raised a colored regiment in Louisiana, becoming its colonel. At the close of the war he was for a short time editor of the New Haven *Journal and Courier*, and in 1866 went to Missouri, when he became editor of the St. Louis *Democrat*. He supported Horace Greeley and the Liberal Republican movement. About this time he published a work advocating free trade, entitled *Does Protection Protect?* Soon after, however, he became a strong protectionist and a Republican, and supported those doctrines until his death. In 1875 he joined the staff of the New York *Tribune*, whose financial writer he remained the rest of his life, one of his editorials appearing in that paper the day of his death. He was also the regular financial reviewer for Dun's Mercantile Agency. Colonel Grosvenor published in 1885 *American Securities*, a standard work on New England manufacturing stocks.

GROVE, Sir GEORGE, C.B., D.C.L., LL.D., who for many years was active in England in the interest of musical culture, died in London, May, 28, 1900. He was born in Surrey, August 13, 1820; and being educated as a civil engineer, erected the

cast-iron lighthouses at Morant Point, Jamaica, and Gibb's Hill, Bermuda, the one in 1841 and the other in 1845. He became interested in literature and music, and was made secretary of the Society of Arts in 1850, and secretary of the Crystal Palace Company on its formation in 1852, the latter position being held by him for over twenty years. In 1873 he became associated with the Macmillan Company, and for several years was editor of *Macmillan's Magazine*. In 1882 he was appointed to be director of the Royal College of Music at Kensington, and held that position until 1894. His zeal in behalf of good music, which showed itself conspicuously in his many analyses of classical orchestral music for the concerts at the Crystal Palace, was a powerful influence for the progress of musical art in England. He was knighted in 1883 at the opening of the Royal College of Music, and created a C.B. in 1895. Among his writings are many articles in Dr. William Smith's *Dictionary of the Bible* (1860-63); *Primer of Geography* (1877); many articles in the *Dictionary of Music and Musicians* (A.D. 1450-1886), of which he was editor, including the biographies of Mendelssohn, Beethoven, and Schubert; *Beethoven and His Nine Symphonies* (1896).

GUADELOUPE, a French colonial possession in the Lesser Antilles, consists of two islands, Basse-Terre and Grande-Terre, separated by a very narrow channel. The area of the colony, which includes a few adjacent small islands, is 688 square miles, and the population is estimated at 167,000, of which 15,000 are coolies. The principal town is Pointe-à-Pitre, with a population of over 17,000, while the seat of the government is Basse-Terre, population about 8000. The principal products of the colony are sugar, coffee, and cacao, the trade being mostly with France. The total imports into the colony in 1897 amounted to 18,400,000 francs, of which 13,000,000 francs came from France. The exports for the same year amounted to 16,300,000 francs, including 13,000,000 francs from France. The revenue is derived from taxes on land and business and from tariff duties. The revenue for 1898 amounted to 5,552,000 francs. The chief sources of revenue were export duties, 555,000 francs; import duties, 550,000 francs; liquor tax, 2,232,000 francs; stamp taxes, 409,000 francs; and taxes on other commodities, 621,000 francs. The contribution of the colony to the French government in 1898 amounted to 71,060 francs. The estimated revenue and expenditures of the colony for 1899 were \$985,219 and \$1,312,200 respectively. The educational institutions of the colony consist of 97 elementary schools, with over 11,000 pupils, and a lycée, with 350 students. The government of the colony is administered by a governor, assisted by an elected council. The colony is represented at Paris by a senator and two deputies. On April 17, 1900, a new tariff of port charges went into effect, providing for additional charges, amounting to more than the former duties.

GUAM, the largest and most southern of the Ladrone, or Marianne, Islands (*q.v.*), situated about 1500 miles east of Luzon, in the Philippines, and a little over 5000 miles west of San Francisco. The area of the island is about 150 square miles, and its population in January, 1900, was 8661, consisting mostly of Charmorros and several hundred natives from the Caroline Islands. The capital is Agaña, with a population of 5249. The soil is generally fertile, but as yet very little of it has been cultivated. The most important product of the island is copra, which is exported to a limited extent. While of very little value in itself, the island may become of much importance in the future, owing to its advantageous location on the way between the United States and the Philippines. The government has made it a naval station, for which the island is well fitted, owing to its good roadstead. It is also expected to make it a station for the Pacific army transports and a mercantile coaling station, as well as a station for the future Pacific cable. The island was captured in June, 1898, by the United States cruiser *Charleston* while on its way to the Philippines. Early in 1899 Commander Taussig took formal possession of the island, and Captain Richard P. Leary, U. S. N., was appointed governor. Under the beneficent rule of Governor Leary the island has prospered both morally and materially. In January, 1900, several measures were adopted by Governor Leary, providing for the abolition of the Spanish system of taxation and substituting in its place a new system; the establishment of schools in which religious instruction should be forbidden entirely; and, finally, commanding each adult resident of the island to learn to write his or her name by July, 1900. In March Governor Leary resigned on account of ill health, and Commander Schroeder was appointed in his place. On November 28 the island was visited by a destructive typhoon and the town of Ynaranjan (population, 550) was destroyed, thirty of its inhabitants being killed and many injured. The United States cruiser *Yosemite*, at that time in the harbor of San Luis d'Apra, was swept out of its anchorage and wrecked on a reef. Five of the crew were lost and the rest were rescued by a collier. According to the latest report of Captain Schroeder, the inhabitants have entirely recovered from the effects of the typhoon, and are no longer in need of the government supply of food and clothing.



SCENES IN GUAM.—1. The main street of Agaña, the capital of Guam. In the foreground is a carabao, or water buffalo, the native beast of burden.

2. Part of Governor Leary's garrison at Agaña.

GUATEMALA, the most northern and western republic of Central America. The capital is Guatemala City.

Area and Population.—The republic comprises 22 departments, of which the total estimated area is 125,100 square kilometres (48,300 square miles), and of which the estimated population at the end of 1898 was 1,574,338. The department of Guatemala was the most populous, having 160,914 inhabitants, and that of Petén the least populous, with 7197. Only a small part of the population, except in the cities, is of pure European descent, about 60 per cent. being Indians, and the remainder chiefly of mixed race. Immigration, though encouraged by the government, is small. The approximate populations of the principal cities are: Guatemala, 75,000; Quezaltenango, 22,300; Totonicapam, 25,200; Coban, 24,500; San Pedro, 11,200.

Government.—By the constitution the chief executive authority is vested in a president, who is elected for six years, but is ineligible for a second term, and is assisted by a cabinet of six members. The president in 1900 was Señor Manuel Estrada Cabrera, who was elected in September, 1898. The legislative power rests with an assembly, the members of which are elected for terms of four years by popular vote in the proportion of 1 representative for each 20,000 inhabitants or fraction thereof over 10,000. Besides municipal justices of the peace, there are 26 courts of first instance, 6 courts of appeal, and a supreme court.

The right of suffrage belongs to male citizens, who, being at least 18 years of age, are members of the army or have received a literary degree from a national school, or being at least 21 years of age, are able to read and write and have a regular means of livelihood.

Army.—Army maintenance requires at least one-tenth of the public expenditure. The regular army consists of about 7000 officers and men, while the effective army numbers about 56,900.

Finance.—For the last few years the condition of public finance has been unsatisfactory, and in 1899 partial repudiation of the foreign debt was proposed, but on account of pressure brought by Germany and Great Britain was not carried into effect. The foreign debt in 1899 was reported to amount to about \$7,359,000, the internal silver debt 18,638,000 pesos, and the internal gold debt 1,203,000 pesos. The principal sources of revenue are customs and taxes on alcoholic liquors and tobacco, and the expenditure is chiefly for the public debt and the departments of war, public instruction, and the interior and justice. Statistics of revenue and expenditure in pesos have been reported as follows, the figures for the fiscal years 1899 and 1900 being estimated:

	1896.	1897.	1898.	1899.	1900.
Revenue.....	15,150,741	12,479,741	9,738,661	9,815,000	.....
Expenditure.....	17,437,452	21,433,194	9,964,833	13,708,781	9,611,201

The currency of Guatemala is chiefly paper, which is greatly depreciated. The value of the silver peso in United States money on October 1, 1900, was 45.1 cents.

Industries and Commerce.—Although the government seems to be always in a condition of financial embarrassment, from the point of view of industry and commerce, according to the *Bulletin* of the Bureau of American Republics, the country in 1900 was "fairly prosperous, the augmentation in the price of coffee, the chief product and dependence of the country, having a beneficial effect." Besides coffee, the annual production of which amounts to over 800,000 quintals, the principal products are sugar, corn, bananas, tobacco, and cacao. Valuable grazing lands are utilized on the high plateaus of the country. The government encourages the rubber industry. In July, 1900, a decree was promulgated, establishing a board of agriculture in each department of the republic. A large part of the most fertile land in Guatemala is under German control.

Various metals and other minerals are known to exist, including gold, silver, copper, lead, tin, mercury, iron, mica, gypsum, salt, and sulphur; but for years exploitation has been meagre. While in the colonial days—before 1820—there is said to have been worked 1332 mines, there is reported only one of any considerable importance in active exploitation at present—the Rosario quartz silver mine in the province of Santa Rosa. There are, however, small amounts of gold washed along the Polochic and Montagua rivers. Guatemala mines are the property of the nation, and permission for exploitation must be obtained from the department of finance. The manufacturing industry is small; a few factories have been established for cotton and woollen goods, the preparation of the grass-cloth plant, furniture, earthenware, etc.; in addition there are breweries, distilleries, foundries, and sugar mills.

The principal export is coffee, of which about two-thirds goes to Germany. Other exports of some importance are bananas (chiefly to New Orleans) and hides. The leading imports include cotton, flour, alcoholic liquors, and iron and steel

wares. The foreign trade is principally with the United States, Germany, Great Britain, and France in the order named. Authorities on the value of Guatemalan commerce disagree; but the following figures, representing pesos, have been reported:

	1896.	1897.	1898.
Imports.....	26,287,145	21,462,053	13,207,656
Exports.....	23,085,544	19,775,800	15,377,460

Most of the foreign shipping is under the American flag. In 1898, 825 vessels entered, and 845 cleared.

Communications.—Guatemala has a number of good wagon roads, but much traffic is still effected by pack mules. A railway 85 miles in length connects the Pacific port San José with Guatemala City by way of Esquintla; another, 32 miles long, connects Champerico, also on the Pacific, with Retalhuleu; and a third, still shorter, runs from the latter town to San Felipe. For some time the Puerto Barrios and Northern Railway has been under construction from a point on the Gulf of Amatique (Caribbean coast) along the Montagua River to San José. In 1900 the work of construction on this line was transferred from the Guatemalan government to an American company. The government had constructed the line over a practically level road-bed from Puerto Barrios to El Rancho, about 133 miles distant. In the remaining 60 miles to Guatemala City heavy grades and other engineering difficulties will be encountered. The company is to operate the road for ten years or longer, if the government so choose, and at the expiration of the period is to receive from the government \$4,000,000 with interest; in further consideration of its service the company receives 500,000 acres of land contiguous to the railway, which will be placed under banana culture.

It is thought that the completion of this line, which will effect railway connection between the Atlantic and the Pacific coasts, will divert much of the coffee traffic from the Pacific routes to the Gulf ports of the United States. In 1900 a concession was granted for the construction of a cogwheel railway over the Chuepache Mountains and around the volcano of Santa Maria from San Felipe to Quezaltenango. The motor power will be electricity, developed from the Samala River. For 1898 there were reported 233 post-offices and 148 telegraph offices, with 3126 miles of line.

Religion and Education.—Roman Catholicism is the prevailing faith, but there is no state church, and the principle of religious toleration is recognized. Primary instruction is free and nominally compulsory. In 1895 there were 1266 government primary schools, with about 75,000 pupils enrolled. In addition there were 49 private primary and secondary schools, 6 institutes and normal schools, and 13 schools for professional or special instruction. As the educational system has been unsatisfactory and inadequate, the government in the fall of 1900 called for the submission of plans for an educational system, embracing primary, secondary, and normal instruction; and it offered a prize of 10,000 pesos for the best and most practicable plan presented. Such a plan will serve as a basis for legislative enactment. Earlier in the year the government decided to introduce military instruction in primary, secondary, and professional schools. In 1900 the reported number of periodicals and newspapers published was 34, of which Guatemala City had 24.

Threatened Revolution.—In December, 1899, General Toledo, who was formerly minister of war and a supporter of President Cabrera, attempted a revolution; but after the insurgents had captured the town of Tacona they were suppressed by the government troops, who captured nearly all of the leaders. Toledo, however, escaped to Salvador, and there continued to develop his revolutionary plans. In the spring of 1900 it was said that he had strong financial support, but no outbreak appears to have occurred up to the close of the year. See CENTRAL AMERICA.

GUINEA WORM. See FILARIA.

GYMNASIUMS, MUNICIPAL. See MUNICIPAL GYMNASIUMS.

GYPSUM. The production of gypsum in the United States in 1899 was 428,661 short tons, against 291,638 short tons in 1898, or an increase of 47 per cent. The value for these two years was \$1,036,860 and \$755,280 respectively. Seventeen States and Territories contributed to the output, Michigan leading, with Kansas second, Texas third, New York fourth, Iowa fifth, and Ohio, sixth. These States were responsible for 90 per cent. of the production, the balance coming from Arizona, California, Colorado, Oklahoma Territory, Indian Territory, Oregon, South Dakota, Utah, Virginia, and Wyoming.

The imports in 1899 had a total value of \$297,926. The world's production in 1898 was as follows:

	Quantity. Short Tons.	Value.
Great Britain	219,549	\$345,882
Canada	219,256	230,440
France	1,931,712	2,777,816
Germany	28,315	13,166
Cyprus	4,279	7,551

GYPSY MOTH. See ENTOMOLOGY.

HAECKEL, ERNST, the distinguished German zoologist and philosopher, published in 1900 *Die Welträthsel* (translated into English by Joseph McCabe, as *The Riddle of the Universe*), a series of essays in exposition of the philosophy proclaimed in *Der Monismus als Band zwischen Religion und Wissenschaft* (1892). This veteran student, born at Potsdam, February 16, 1834, received thorough training in natural science and medicine at Berlin, Würzburg, and Vienna. In 1865 he was appointed professor of zoology at Jena, where, save for extensive travels, he has since continuously worked. He has made invaluable contributions to the study of the most primitive pelagic forms, his writings including works on radiolarians (*Die Radiolarien*, 1862), calc-sponges (*Die Kalkschwämme*, 1872), and the contributions to the *Challenger* voyage reports. He was first among German scientists unconditionally to declare for Darwin's theory of development. His most noted work in this field is *The Natural History of Creation* (*Natürliche Schöpfungsgeschichte*, 1868). He is an able stylist, and in his own drawings for his works displays much artistic skill.

HAGARTY, Sir JOHN HAWKINS, D.C.L., Canadian jurist, died in Toronto, April 27, 1900. Born December 17, 1816, in Dublin, Ireland, he was educated at Trinity College in that city, and, having gone to Canada in 1835, was admitted to the Toronto bar in 1840. Ten years later he became a queen's counsel, puisne judge of common pleas in 1856, and finally, after several judicial advancements, chief justice of Ontario, 1884. He retired from this position in 1897 and was knighted.

HAGUE CONFERENCE. In 1900 the Powers represented at the International Peace Conference at The Hague ratified in whole or in part the action of their delegates as embodied in the Final Act of July 29, 1899. To those who thought the conference a harbinger of the millennium the results of its work proved profoundly disappointing. To those who at the very beginning expressed their doubt in the sincerity of the nations or the good intention of the delegates the outcome afforded no little satisfaction. Those persons, on the other hand, who were content to see in the congress an approach toward the ultimate realization of a distant ideal realized that a small amount of progress had been made in this direction. Called for the purpose of putting an end to the enormous growth of standing armies, the conference quickly decided that the task was impossible; charged with the reduction of national armaments to something like a fair proportion, it discovered that the nations were opposed to such a measure; instructed to consider the advisability of prohibiting the use of new weapons and explosives, it contented itself with forbidding for five years the use of expanding bullets and balloons for purposes of attack. The question of international arbitration was the last of eight propositions submitted to the conference, yet a scheme for international arbitration is practically the only thing accomplished by The Hague conference. The final measure comprised three conventions, three declarations, and five wishes. Of the conventions, the first deals with the pacific settlement of international disputes. As ratified by the United States Senate on February 5, 1900, this treaty, closely summarized, contains the following provisions: To prevent recourse to force in their relations, the signatory Powers agree to further the settlement of disputed questions by mediation or arbitration. In case of dissension between states, the parties to the quarrel pledge themselves to seek the mediation, "as far as circumstances will permit," of some friendly Power. On the contrary, any Power may offer its services as mediator, and such action must never be regarded as unfriendly. The duty of the mediating Power is to reconcile conflicting claims; its conclusions are not obligatory, but advisory, and its office ceases with the rejection by either party of the proposed terms of agreement. The acceptance of mediation does not put a stop to preparations for war, the mobilization of troops, or military operations if hostilities are begun. In appropriate circumstances a special form of mediation is recommended, by which each party chooses a friendly Power to act as its agent in carrying on negotiations, itself remaining passive for a period of thirty days or longer if expressly provided. As a subsidiary form of mediation it is agreed that in controversies between nations, involving neither the "honor nor the essential interest" of either party, international commissions of inquiry be resorted to for the settlement of disputed claims. The decisions of such commissions are to have no arbitral character, but are to contain merely a settled statement of facts,

upon which the contending Powers may act as they see fit. International arbitration is laid down as the most efficacious method of solving problems of a judicial character, and especially questions involving the interpretation and application of treaties. Arbitration is not obligatory, but once agreed to, implies submission in good faith to the decisions of the tribunal. To facilitate the peaceful settlement of disputes a permanent court of international arbitration is provided for, consisting of four persons from each of the signatory Powers, appointed for a term of six years, and from this permanent court the contending parties choose five men to constitute the arbitral tribunal. An international bureau at The Hague is established, and a permanent administrative council, consisting of the ministers of the signatory Powers at The Hague and the Netherlands minister of foreign affairs, is created. The remaining articles of the convention deal with the methods of procedure to be followed by the tribunal in the matter of receiving evidence, granting public hearings, and framing the decision. No appeal is allowed from the judgment of the tribunal, but a revision may be asked for if the right to demand one has been reserved from the beginning. Finally, it is provided that the decision of the tribunal shall not be binding upon any third Power whose interests may be affected by the judgment, but which is not a party to the controversy. Throughout the convention is so worded as to eliminate the least suggestion of obligation on the part of the Powers to resort to mediation or arbitration. They may submit to mediation "as far as circumstances will permit;" they may submit to international commissions of inquiry "if their essential interests are not involved;" they may call for the services of the permanent court, "unless they have agreed upon a special method of arbitration." The real character of the treaty is thus described by Professor John Bassett Moore: "It does not purport to make peace compulsory. . . . It permits each nation to determine for itself what its individual interests and its individual policies may require. But it seeks to render the chances of a resort to arms more remote by providing a plan under which, before force is employed, the efficacy of reason and argument may be tried under the sanction of an enlightened public opinion."

The second convention signed at The Hague revised the laws and customs of war as drafted by the Brussels Conference of 1878. The third convention applied the terms of the Geneva Convention of 1864 to naval warfare. The three declarations forbade (1) the throwing of projectiles and explosives from balloons; (2) the use of projectiles diffusing asphyxiating gases; (3) the use of expanding bullets. The five wishes were: (1) that a future conference be called to consider the rights and duties of neutrals; (2) that the governments might come to some agreement regarding new types and calibres of guns; (3) that the governments consider the advisability and possibility of limiting their armaments and war budgets; (4) that a future conference consider the inviolability of private property in time of war; (5) that a future conference consider the question of the bombardment of ports, cities, and villages by hostile fleets. On September 7, 1900, formal record was made at The Hague of the ratification of the different parts of the Final Act. The convention concerning international arbitration was signed by Austria, Belgium, Bulgaria, Denmark, France, Germany, Great Britain, Italy, the Netherlands, Persia, Portugal, Roumania, Russia, Siam, Spain, Sweden and Norway, and the United States. The second convention was signed by the same Powers, with the exception of the United States; the third convention by all. The United States and Great Britain did not sign the declarations against the use of asphyxiating gases and expanding bullets.

HAILSTORM PREVENTION. See METEOROLOGY and HORTICULTURE.

HAITI, a negro republic, constituting the western portion of the island of Haiti, the eastern part being the republic of Santo Domingo. The capital is Port-au-Prince.

Area, Population, and Education.—The republic, which was formerly a French colony, has an estimated area of 10,204 square miles. No census of the population has been taken, but an estimate in 1887 placed the number of inhabitants at 960,000 and another in 1894 at 1,216,625, while, according to a still more recent estimate, the population is about 1,700,000. Only a few of these are whites, about 90 per cent. being negroes and the remainder largely mulattoes. The populations of the chief towns are: Port-au-Prince, upward of 50,000; Cap Haitien, about 29,000; Les Cayes and Mirebalais, each about 25,000; St. Louis du Nord, about 16,000; Jacmel, about 6000. The official language of the republic is French, and the language spoken by the people a French dialect. Roman Catholicism is the prevailing religion. Though education is very backward the country is said to expend annually upon schools nearly 1,000,000 gourdes. In addition to private schools and five lycées, there are some 400 public schools under government direction. In 1900 the reported number of periodicals and newspapers was 11, all but one of which were published at Port-au-Prince.

Government, etc.—By the constitution the chief executive authority is vested in

a president elected by popular vote for a term of seven years. The presidential term of office, however, has often been interrupted by insurrections and elections have been effected by irregular means. The president in 1900 was General Tiresias Simon Sam, who was elected in April, 1896. He is assisted by a cabinet of four members. The legislative power devolves upon a national Congress consisting of a Senate and a House of Representatives, members of the former being selected to the number of 39 for terms of six years by the representatives, and of the latter for terms of three years by direct vote of the people. The army consists nominally of 6828 men; six small third-class cruisers constitute the navy.

Finance.—Revenue accrues almost entirely from import and export customs. For the fiscal year 1899 the estimated revenue was 2,337,205 gourdes (gold valuation), and 5,626,260 gourdes (paper), and the estimated expenditure was 2,325,284 gourdes (gold valuation) and 5,633,068 gourdes (paper). At the beginning of 1899 the external debt amounted to 13,141,751 gourdes (gold valuation); the internal debt, 4,407,055 gourdes (gold valuation) and 9,227,713 gourdes (paper). The value of the gourde silver piece in United States money is 96.5 cents. On June 12, 1900, the United States minister at Port-au-Prince announced that the Haitian government had adopted the gold monetary standard, the United States gold dollar becoming the unit of value.

A United States consular report, dated February 13, 1900, stated that the Haitian government had consolidated the public debt, including the loans guaranteed by a percentage of the export revenue. This percentage was a guaranty for paper circulation, and when, with the fall in the price of coffee, the export duty on this crop became nearly prohibitive, both private and public financial conditions necessarily grew very serious. Under the new arrangement the government receives the full amount of the export duties, not only on coffee, but on logwood and cacao, and so is in a position, if it sees fit, to diminish the tariff on the first-named product, and thus greatly stimulate industry. For the relinquishment of these liens the creditors receive gold-bearing bonds, augmented 10 per cent. in value, bearing 12 per cent. interest, and payable in fourteen years. The financial situation, which during the last few years has been deplorable, appeared to improve somewhat in the latter part of 1899 and during 1900.

Industries, Commerce, etc.—Agriculture is the leading industry. The chief exports are coffee, cacao, and logwood; other exports include cotton, hides and skins, honey, mahogany, turtle shells, and wax. About 66 per cent. of the imports come from the United States, but more than 90 per cent. of the exports are sent to Europe, principally to France, Germany, and Great Britain, named in the order of their importance. The total imports in 1899 were valued at \$3,943,800, and the exports at \$12,747,900. The imports from the United States in the calendar year 1899 amounted to \$2,357,562; in 1900, to \$3,720,279. The exports to the United States in the same years amounted to \$862,051 and \$1,357,775 respectively. In 1900 an improvement in trade was brought about by a rise in the price of Haitian coffee and by the consolidation of debts on the part of the government. In August, 1900, a reciprocity treaty reducing import customs was entered into between Haiti and France; this treaty will cause a falling off in Haitian revenue, but the stimulation of trade effected thereby will probably be more than compensatory for the country. The principal Haitian product affected is coffee.

In 1900 a railway was in course of construction from Cap Haitien to Gran Firière du Nord, eighteen miles distant. In the summer of that year the government granted several concessions for the construction of railways. One of these when completed will connect Port-au-Prince and the city of Santo Domingo.

HALE, LUCRETIA PEABODY, an American author, died June 12, 1900. She was born at Boston in 1820, and was the daughter of Nathan Hale, a well-known editor of that city. Her delightful *Peterkin Papers*, which first appeared in *Young Folks* and *St. Nicholas*, and were in 1882 published in book form, gave her a distinct place in literature on account of their humorous sketches of human nature. Miss Hale was a frequent contributor to the magazines and the author of numerous religious books for the young. Her life was identified with the literary and educational work of Boston.

HALL, Sir CHARLES, K.C.M.G., recorder of the city of London, died March 9, 1900. He was born in 1843, and was educated at Harrow and at Trinity College, Cambridge. He was called to the bar in 1866, and from 1877 to 1892 was attorney-general to the Prince of Wales. In the latter year he was made recorder of London, and he held that office to the time of his death. He was a Conservative member of Parliament from West Cambridgeshire in 1885-92, and after the latter year for the Holborn division of Finsbury. For his services as British delegate to the International Maritime Conference at Washington in 1889 he was created in the following year a K.C.M.G.

HALL OF FAME. See NEW YORK UNIVERSITY.

HAMILTON, Colonel IAN STANDISH MONTEITH, major-general on the staff of the Natal Field Force, was born at Corfu in 1853, studied at Cheam and Wellington College, and entered the army in 1873. He served on the Afghan border, in the Boer War of 1881, on the Nile, and in Egypt, being decorated for gallant behavior at Chitral in 1895. In 1900 he distinguished himself by his activity in the Orange Free State, and above all in the last stage of the fighting around Lydenburg, Komoti Poort, and the Portuguese border. He has written *Icarus; A Jaunt in a Junk; Fighting of the Future; A Ballad of the Hodji*.

HAMILTON COLLEGE, at Clinton, N. Y., founded in 1812. During the year 1900 the new Hall of Philosophy was finished at a cost of \$27,000. The building, mainly of stone, is the gift of the Hon. Chauncey S. Truax, A.M., '75, and completes a scheme of recitation halls which amply meet the demands of all departments. The library, which contains 45,000 bound volumes and 4000 pamphlets, received comparatively large accessions in the past year by gifts and purchase. In 1899-1900 the college had 20 instructors and 176 students. Its income for the last academic year was \$70,000; its receipts from benefactions, \$39,000. See UNIVERSITIES AND COLLEGES.

HAMLIN, Rev. Dr. CYRUS, the organizer of Roberts College, Constantinople, died August 8, 1900. He was born in 1811 at Waterford, Me., graduated at Bowdoin in 1834, and three years later at the Congregational Theological Seminary at Bangor, Me. He immediately entered the missionary field, and was sent by the American board to Turkey. In order to give employment to persecuted Armenians Dr. Hamlin introduced into Constantinople the making of hop-yeast bread, which at the time of the Crimean War was in such great demand that he cleared \$25,000 for the founding of churches and schools. In 1860 he succeeded in organizing Roberts College after seven years of contest with the Turkish government and in committing it to the care of the United States by imperial edict. He was the president until 1876, when he accepted the professorship of dogmatic theology in Bangor Seminary. From 1880-85 he was president of Middlebury College.

Most of Dr. Hamlin's writings are in Armenian. His literary work in English includes *Among the Turks; My Life and Times*, and numerous contributions to magazines.

HAMMOND, WILLIAM ALEXANDER, M.D., surgeon-general, with rank of brigadier-general, U. S. A., retired, died at his home in Washington, D. C., January 5, 1900. He was born at Annapolis, Md., August 28, 1828. After studying medicine in Harrisburg, Penn., he entered the medical department of the University of the City of New York, where he graduated in 1848. The following year he entered the United States army as assistant surgeon, with rank of first lieutenant. He served at various posts in the West until early in 1860, when he resigned from the army to accept the professorship of anatomy and physiology in the Maryland University School of Medicine. After the Civil War broke out he re-entered the army. The inadequate army medical department was reorganized pursuant to an act of Congress, and Dr. Hammond was appointed to the position of surgeon-general, with rank of brigadier-general, in April, 1862. In this capacity he served, meeting with many serious difficulties. Controversies arose, charges of official corruption were preferred against him, and after trial by court-martial he was dismissed from the army in August, 1864. In 1878 Congress authorized President Hayes to review the court-martial proceedings, the result being that Dr. Hammond was restored to rank and placed on the retired list. After his dismissal from the army he began practice in New York, where from 1867 to 1873 he occupied the chair of mental and nervous diseases in the Bellevue Hospital Medical College. He then accepted a similar position at the University of the City of New York, where he remained until 1882, where he assisted in founding the New York Post-Graduate Medical School. He established the *Quarterly Journal of Psychological Medicine and Medical Jurisprudence*, and was one of the founders of the *New York Medical Journal*. At the time of his death he held professorships in the New York and Baltimore medical colleges. He wrote the following novels: *Dr. Grattan; Mr. Oldmixon; A Strong-Minded Woman; Lal; A Son of Perdition; Robert Severne*, and *On the Susquehanna*. Besides a large number of magazine articles Dr. Hammond's medical works include the following: *Military Hygiene; Sleep and its Derangements; Wakefulness; Physiological Essays; Physiological Memoirs; Lectures on Venereal Diseases; Sexual Impotence in the Male; A Treatise on Insanity; Insanity in its Medico-Legal Relations; Diseases of the Nervous System; The Physics and Physiology of Spiritualism; Neurological Contributions; Cerebral Hyperemia*.

HANDEL AND HAYDN SOCIETY, an oratorio society, incorporated in Boston in 1816, holds four annual concerts with the Boston Symphony Orchestra.

Conductor, Emil Mollenhauer; secretary, William F. Bradbury, 369 Harvard Street, Cambridge, Mass.

HANBOW. See CHINESE EMPIRE, paragraph Cities of China.

HANNA, MARCUS ALONZO, capitalist and United States senator, was born at New Lisbon (now Lisbon, O.), September 24, 1837. He studied at Western Reserve College, and from 1857 to 1867 was in the grocery business. Entering the coal and iron industries, he gained a reputation for sagacious business methods and for fairness to his employees. His financial interests were gradually extended to banking, to ship-building, and transportation on the Great Lakes, and to the development and control of the Cleveland City Railroad. Mr. Hanna was delegate to the National Republican conventions of 1884 and 1888; but it was only in 1896, when as chairman of the National Republican Committee he took over the management of the Presidential campaign of that year, that he gained a political reputation of national proportions. In the convention Mr. Hanna insisted upon the maintenance of the gold standard, and he was not at all disconcerted when the silver faction of his party bolted and left the party councils. Previous to the convention Mr. Hanna had organized the delegates in favor of the nomination of William McKinley for the Presidency. And although Mr. McKinley had previously been known as, at least, a quasi-silver man (see article MCKINLEY), he later declared for the gold standard largely, it was thought through the influence of Mr. Hanna. In the campaign which followed Mr. Hanna's reputation as a successful business man gave him wide influence in raising money for campaign purposes and in gaining the support of conservative interests. At this time Mr. Hanna was reported to have said that his interest in the election was purely that of a business man, and that he had no political aspirations. When, however, John Sherman, senator from Ohio, resigned that office to take the position of secretary of state in President McKinley's cabinet, Governor Bushnell, of Ohio, promptly appointed Mr. Hanna senator pending the action of the Ohio Legislature. An active canvass was then made by Mr. Hanna to insure the election of a Legislature favorable to him. When the Legislature convened in January, 1898, it had a large Republican majority on joint ballot, but several Republicans were strongly opposed to Mr. Hanna's election. Mr. Hanna was eventually chosen, with not a single vote to spare. Charges of bribery were immediately made against him in both branches of the Legislature, and a committee was appointed, which investigated the charges and reported their findings to the United States Senate. That body, however, took no action thereon. Upon his entrance to the Senate Mr. Hanna became identified with the administration and with the important acts which the administration especially desired. As a considerable capitalist and as an employer of labor on a large scale Mr. Hanna also commanded the confidence of business men who had large financial interests, and who were desirous of legislation which would benefit them. At the Republican National Convention, held in June, 1900, Mr. Hanna was one of the five or six men who practically guided the business of the convention and formulated its plan of campaign. He was again elected chairman of the Republican National Committee; and although confident of President McKinley's re-election, prosecuted the campaign with all the vigor and energy which he had shown in 1896. During the year Mr. Hanna became identified with the Ship Subsidy bill, designed to protect the infant industry of ship-building in this country. Mr. Hanna has afforded cartoonists of this country an apt subject, and has made the fortune of more than one of them.

HARBOR IMPROVEMENTS. The year 1900 saw a number of important projects for river and harbor improvement started in addition to substantial progress on the works already begun. During 1900 the contractor for the New York Harbor improvements was engaged in constructing his plant and in completing the other arrangements preliminary to the commencement of work. The project for regulating the levels of the Great Lakes by damming the Niagara River received comparatively little attention during the year, but it was officially reported that it would meet with renewed consideration during 1901. At the same time it was stated also that the River and Harbor bill for 1901 would carry with it appropriations amounting to about \$60,000,000 for the improvement of the navigable waters of the United States. This is the largest year's appropriation ever proposed in Congress for river and harbor work. In foreign countries important projects for harbor improvement are under way at Port Arthur, on the Pacific coast; at Tokio, Japan; at Montevideo, Uruguay, and at Rosario, Argentine Republic. A brief outline of each of these projects follows: At present the harbor at Port Arthur has an entrance channel which with a moderate amount of dredging would have an average depth of about 24 feet at mean low tide. The narrowest part of this channel is 830 feet wide at the same stage of water. It is proposed to create a second alternative entrance 700 feet wide and 30 feet deep, and to excavate a new harbor. The dredging will comprise some 45,720,000 cubic yards of material, consisting of sand, mud, and shells.

It is proposed to use the dredged material for filling in the shallow portions of the harbor, and thus reclaim a large amount of land for business purposes. In Japan harbor works are being considered for the ports Tokio, Kobe, and several others of less importance, involving altogether an expenditure of \$60,000,000. Dr. Turnichi, the vice-minister of communications, divides this expenditure as follows: The work at Tokio will cost \$30,000,000, distributed as below: Stone-faced embankment and quays, \$7,000,000; reclamation, \$4,500,000; machinery, \$2,500,000; materials and sundries, \$6,500,000; warehouses and buildings, \$9,000,000. The payment of this total sum would be spread over about ten years at the rate of \$1,500,000 the first year and \$2,500,000 for each year thereafter until finished. The harbor at Kobe is to cost \$11,500,000. This scheme includes the reclamation of about 300 acres of foreshore, a harbor depth of 24 to 30 feet, and a breakwater to enclose an area of 560 acres, having a depth of 30 feet and more. The harbors of Osaka, Matsushima, Itozaki, Takamatsu, Otaru, and Abashiri are also to be improved at a cost of from \$2,700,000 to \$4,200,00 each.

At Montevideo the works will comprise breakwaters to force a protected harbor, with quays and piers for shipping, as well as dry docks, landing places, and other accessories. A considerable amount of dredging will also be required, giving a depth of about 25 feet of water. The breakwaters will be of rubble stone and stone blocks, faced on the outer side with large blocks thrown irregularly on the slope. The top will be of concrete blocks, carrying a shelter wall. The shore will be protected by a foot-wall of stone and by slope paving. The piers and quays will be faced with concrete blocks, backed by rubble filling and earth. The two main arms of the breakwater will be about 3500 feet and 2600 feet long, and the other portions will be about 2000 feet and 2200 feet long. The piers will be about 1500 feet in length and 300 feet wide. The total cost is estimated as follows: Breakwaters, \$4,000,000; quays and piers, \$3,700,000; dredging and removing rock, \$2,500,000; paving, \$660,000; various works, \$1,140,000; total, \$12,000,000. Contracts for this work were let during 1900. Details of the new harbor works at Rosario are not available, but it is known that they will involve a large expenditure of money, and that contracts are to be let in 1901.

HARMER, ALFRED C., Republican congressman from Pennsylvania, died March 6, 1900. He was born in 1815 in Germantown, now a part of Philadelphia, and received an academic education. He entered business and engaged in railroad, mining, and land enterprises. He was a member of the city council of Philadelphia, 1856-60, and recorder, 1860-63. From 1871 to the time of his death he served continuously in Congress, except in the 44th, and received the title "Father of the House."

HARNDEN, General HENRY, commander of the Wisconsin department of the Grand Army of the Republic, died at Madison, Wis., March 17, 1900. He was born in Massachusetts in 1823, served in the Mexican and Civil wars, being wounded several times in the latter. He commanded the Wisconsin cavalry that captured Jefferson Davis.

HARROWBY, Third Earl, DUDLEY FRANCIS STUART RYDER, D.C.L., died in Staffordshire, March 26, 1900. Born at Brighton, January 16, 1831, he was educated at Harrow and at Christ Church College, Oxford. As a Conservative he represented Lichfield in Parliament in 1856-59 and Liverpool 1868-82. Having succeeded his father to the earldom in the latter year, he was lord privy seal in 1885-86. In 1871-72 he was a member of the London School Board, vice-president of the council on education in 1874-78, and president of the Board of Trade, 1878-80. Holding strongly to the evangelical position, he was better known for his religious than his political activity. He served as president of the Bible Society, and for many years took much interest in various other religious organizations. His brother, Henry Dudley Ryder, succeeds to the title.

HART, Sir ROBERT, director-general of the Chinese Imperial Maritime Customs, has for the last forty years been one of the most conspicuous Englishmen in China. He was one of the foreigners besieged in the Peking legation district by the Boxers and imperial troops from June 20 to August 14, 1900. Sir Robert Hart was born in 1835, graduated from Queen's College, Belfast, and in 1854 went to China as a student interpreter in the British consular service. In 1863 he received the appointment of inspector-general in the Maritime Customs, and since 1885 he has been director-general. The year of his promotion he was offered the position of minister to China, but declined. The Imperial Maritime Customs, the organization responsible for the collection of export and import duties levied on foreign and native goods, has since 1859 been conducted by representatives of the Western nations. The service was in a state of confusion when Sir Robert entered upon his work of reform. Its successful and uniform growth is due to his exceptional ability. Under his administration the revenue has increased threefold, and become a most

important factor in Chinese finance. The position demanded both willingness to promote the progressive ideas of the West and loyalty to the conservative imperial government that employed him. By respecting native prejudice and love of etiquette, and by unswerving honesty to the government, Sir Robert Hart gained the good will and won the confidence of the Chinese. The result of his policy has been the introduction of important reforms, including the organization of the Imperial Postal Service, the founding of a European university at Peking, and general improvements in the condition of the harbors. Sir Robert Hart's position likewise involved diplomatic friction with the Western nations, but he met this difficulty by fair and consistent treatment so universally appreciated that no complaint has ever been made of his partiality to British officials.

Recognized as a man more familiar with official China than any other foreigner, and one whose judgment has always proved trustworthy, Sir Robert Hart's opinion in regard to the recent crisis has received much attention. He took a conservative position in regard to the treatment of the Chinese. He advocated the condoning of the Boxer uprising and the support of the Manchu dynasty. He had before been accused of dealing with Chinese affairs from a Chinese point of view, and so it is not surprising that when his decisions ran counter to popular feeling his judgment was looked upon in London as being warped by sympathies derived from long residence in China.

HARTIG, ERNST, director of the Royal Saxon Technical High School at Dresden, died on April 23, 1900. He was born January 20, 1836, and was educated at the Dresden Polytechnicum, where he became assistant in mechanical technology in 1862 and professor in 1865. In 1890 he was appointed director of the Technical High School. In the course of his life Professor Hartig was the recipient of honors from kings of the German Empire as well as from foreign learned societies. He made numerous researches in machinery, and after 1877 he was actively engaged in the formulation and systematization of the patent laws of Saxony and the German Empire. He published *Studien in der Praxis des kaiserlichen Patentamtes* in 1890. Among his important works are *Untersuchungen über die Heizkraft der Steinkohlen Sachsens*, published in 1860; experimental studies of the power required for spinning and weaving machinery, published from 1864-69; a similar work on machine tools in 1873, and one on wool machinery in 1876. He prepared and completed the fifth edition of Karmarsch's *Handbuch der Mechanischen Technologie*. He was considered an authority on the materials of engineering and in all departments of textile work.

HARTMANN, JOHANN PETER EMILIUS, a Danish composer, died March 10, 1900. He was born in Copenhagen, May 14, 1805, and received his first instruction in music from his father, and later studied with Weyse. He turned aside, however, from music to the law and for a time held public office; but when about thirty years of age he began to devote himself exclusively to music. After he had acted for some time as organist in a church at Copenhagen he made his *début* as a composer in 1832 with the opera *Ravnen*. This was followed by the operas *Corsarerne* (text by Herz) and *Liden Kirsten*, 1846 (text by Anderson). He wrote a number of notable ballets, including *Fantasiens*, *Thrymskviden*, *Valkyrien*, *Et Folkesagn*, and *Arkona*. Among his well-known vocal pieces are *Dryadens Bryllup*, *Undine*, *I Provence*, *Sulamith og Salomon*, and *Syvsoverdag*. He wrote a number of symphonies and pieces for the piano, and composed the music for several of Öhlenschläger's dramas, one of which was *Guldhornene*. Others of his famous pieces are the grand cantata *Voluspa* and the funeral composition on the death of Thorwaldsen. Almost all of Hartmann's work is distinguished by an artistic seriousness and dramatic force, and what may be called its national color has endeared it to the people of Denmark. Almost to the time of his death he continued to compose and to perform his duties as organist at Our Lady's Church, Copenhagen.

HARVARD UNIVERSITY, Cambridge, Mass., founded 1636. Harvard, besides being the oldest and one of the richest universities of the country, possesses the largest student body. Besides 987 students in the summer school of 1900, there were in attendance at the beginning of the academic year 1900-01, 4288 students, enrolled in various regular courses, as follows: Graduate school, 341; college, 1992; Lawrence scientific school, 507; divinity school, 28; law school, 647; medical school, 605; dental school, 126; veterinary school, 18; Bussey institution, 33. The faculty numbered 496. The addition to the library collection during 1899-1900 far exceeded the average increase (10,731), being 29,626 volumes, of which about half were by gift. The present extent of the university library is 576,950 volumes and 458,361 pamphlets. By far the most important addition of the year was the Riant library of 7649 volumes and 1162 pamphlets relating to Turkey and the Latin East. The librarian reports that this is probably the most valuable collection that the library has ever received, with the possible exception of the Ebeling library of American history, received in

1818 from Israel Thorndyke. Its purchase was largely made possible by gifts of money from Mr. J. R. Coolidge, of Boston, and Professor Coolidge. Extensive and valuable additions were made to the Museum of Comparative Zoology, the Peabody Museum, and the Fogg Art Museum; work was begun on the building for the Semitic Museum, and many new objects were acquired for the collection. The total receipts from benefactions in 1899-1900 were \$855,101.63, not counting nearly \$75,000 subscribed on account of the Cuban teachers in the summer school of 1900. The larger gifts include an unrestricted bequest of \$85,000 from the estate of R. C. Billings; \$50,000 from Jos. Lee and Mrs. E. P. Shattuck for a chair in history; \$50,000 from the estate of Calvin Ellis; \$115,000 from an anonymous giver for a building for architecture, and \$20,000 for books, prints, etc.; \$100,000 from Professor Agassiz, Mr. and Mrs. Q. A. Shaw, and Mrs. H. L. Higginson for an addition to the university museums; \$50,000 from Jas. Stillman toward an infirmary, and \$50,000 from Jacob H. Schiff for the Semitic building. Exclusive of gifts, the income for the year for educational, administrative purposes, and the like was \$1,376,672. In addition to the building for architecture two structures for the scientific school are being erected by the corporation—an addition to Ratch Laboratory and a building for the engineering department. The amount of Harvard's productive funds is now \$12,614,448, and the value of her unproductive property is probably equal to a like amount.

The graduate school at the present time is as large as Harvard College was 45 years ago. In 1899-1900 nearly a third of the graduate students had already carried on graduate studies elsewhere. In the college two matters of especial interest were discussed during the year. The only study regularly prescribed for candidates for the B.A. degree is freshman English, freshman German, or French being prescribed only for those who have not presented both German and French for admission. In addition, if freshman English is passed below a certain ranking, a half course must be taken in the sophomore year. With the belief that a large portion of the formal training in the writing of English desirable for a college graduate can now be obtained early in secondary schools, the faculty has made provision for the passing up of freshman English before entrance. In reference to the workings of the elective system since freshman studies became elective (1884-1900), investigations show that there has been no extreme specialization; and that a boy of 18 who has had good training will use the system wisely, while the one who has had an imperfect training is more likely to accomplish something worth while. The conclusion of President Eliot is that for a student who has determined his future profession free election, and not flexible groups, is necessary, while "a prudent student in arts and sciences who does not know what his profession is to be will choose his studies from among those which give him pleasure and in which he has capacity to excel; because it should be somewhere in these fields that he should find his future calling." The divinity school provided for a second time a summer school in theology. The law school is unusually prosperous, and it is estimated that within ten years its library will include 100,000 volumes. The medical, dental, and veterinary faculties were consolidated to form a single faculty of medicine, which should confer the degrees M.D., D.M.D., and M.D.V. The financial result of the year for the veterinary school and hospital was again discouraging, the deficit being \$4207. After an existence of eighteen years with no endowment, during which time all veterinary instruction in the United States has risen in character, to which result this school has distinctly contributed, the school, hospital, and free clinic are now to be discontinued, unless an immediate endowment be made. In this event, the country will lose its oldest and most famous veterinary school. See *PSYCHOLOGY, EXPERIMENTAL; EDUCATION IN THE UNITED STATES; RADCLIFFE COLLEGE; and UNIVERSITIES AND COLLEGES.*

HASWELL, WILLIAM HENRY, British vice-admiral, died January 18, 1900, at the age of 81 years. Having entered the navy in 1830, he took part in the capture of St. Jean d'Acre in 1840, then served in South American waters, especially for the suppression of slavery in Brazil, and then for the same purpose off the west coast of Africa. He was in command of the *Investigator* in the expedition of Captain Robert McClure, which during 1850-54 proceeded across the Polar Sea from Bering Strait to Baffin's Bay, being for most of the time held fast in the ice. While, in 1857, commanding the *Himalaya*, sent with troops to China, he learned at Angier Point of mutiny in India, and on his own responsibility proceeded with the troops to Calcutta. This action is said to have saved Lucknow. For it he received the thanks of the governor-general and of the lords of the admiralty.

HAUPTMANN, GERHART, the distinguished German dramatist, during 1900 provoked the debate customarily attendant upon his works through the farce-phantasy *Schnuck und Jau*, and the drama *Michael Kramer*. Hauptmann was born in Salzbrown, Prussian Silesia, November 15, 1862, and studied at Breslau, Jena, and Ber-

fm. To Berlin he came after a residence in Italy, but later withdrew to Salzbrunn. In his earlier so-called naturalistic manner are *Vor Sonnenaufgang* (1889); *Einsame Menschen* (1891), and *Die Weber* (1892), first published in the Silesian dialect. *Hanneles Himmelfahrt* (1893) and *Die Versunkene Glocke* (1896) enter the domain of mystical symbolism, a domain to which it is almost universally regretted that the author subsequently appears disinclined to return. Of all Hauptmann's works, *Die Versunkene Glocke* has attracted most attention in America, where C. H. Meltzer's careful translation, *The Sunken Bell*, was publicly presented in 1900. See DRAMA.

HAWAII, or SANDWICH ISLANDS, consists of about a dozen islands in the Pacific Ocean, of which the most important are: Hawaii, Kauai, Niihau, Maui, Molokai, Lanai, and Oahu. The Hawaiian islands were annexed to the United States by the act of Congress approved July 7, 1898, which took effect in Hawaii August 12, 1898. The act of Congress approved April 30, 1900, made provision for a territorial government, and under this act Sanford B. Dole took the oath of office as governor on June 14, 1900. The total area of the islands is, approximately, 6449 square miles. The population, according to the last Hawaiian census, taken in 1896, was 109,020, and according to the United States census of 1900, 154,001. The capital is Honolulu, on the island of Oahu.

Agriculture.—The production of sugar, the chief industry of Hawaii, has been greatly stimulated by annexation to the United States. In 1899 there were 58 plantations, 55 of which had their own reducing plants. The value of sugar exported in 1898 aggregated \$16,614,623; in 1899, \$21,898,191; and in the first half of 1900, \$14,770,547. The number of sugar plantation laborers in 1898 was 28,579, and in 1899, 35,987. Rice is cultivated almost entirely by the Chinese inhabitants, and two crops are harvested each year. The value of rice exported in 1898 was \$149,278; in 1899, \$42,562. During the past decade the cultivation of coffee has developed to a considerable extent. The area devoted to the cultivation of this plant in 1897 was 6154 acres, and by 1898 it had increased to 8888 acres. The value of recent exports of coffee has been as follows: In 1898, \$115,945; in 1899, \$132,347; in the first half of 1900, \$49,553. The value of bananas exported in 1898 was \$66,581; in 1899, \$84,269; and in the first half of 1900, \$9317. The export for this last period was disastrously interrupted by the prevalence of the bubonic plague in Honolulu, and the consequent quarantine regulations.

A very important crop is that of the vegetable known as taro. This is a large tuber, generally cultivated in wet land which can be flooded and drained at will. Taro is the chief food of the native Hawaiians, and the entire product is locally consumed. Miscellaneous products are maize, oats, barley, pineapples, peaches, etc. The live-stock industry has been carried on in a somewhat desultory fashion, and within the past two years the increased demand for land for agricultural purposes has tended to diminish the already small acreage of pasture lands. In 1899 the native cattle consumed numbered 8651; native calves, 1528; native sheep, 13,220. The exportation of wool in 1899 was 307,551 pounds, valued at \$26,679.

Commerce.—During the fiscal year ended June 30, 1900, the exports of merchandise aggregated in value \$20,707,903, and the imports, \$13,509,148, an increase of \$2,976,449 in exports, and of \$4,203,678 in imports. The following table shows the increase in the trade between the United States and Hawaii since annexation:

Year ended June 30:	Exports, Hawaii to United States.	Imports, United States to Hawaii.
1896.....	\$11,757,704	\$3,985,707
1897.....	13,687,799	4,690,075
1898.....	17,187,380	5,907,155
1899.....	17,831,463	9,305,470
1900.....	20,707,903	13,509,148

Railways.—In 1898, 17 miles of railroad were constructed in the island of Oahu, making the total mileage in all of the islands, 102.7. The passenger earnings of the Oahu Railway and Land Company, which controls 71.7 per cent. of the total mileage, were \$59,259 in 1898, and \$107,682 in 1899; freight earnings, \$152,235 in 1898, \$281,526 in 1899, and \$206,216 for the first six months of 1900.

The Hawaiian Tramway Company operates a street railway on the principal streets of Honolulu, the aggregate length of the lines being over 12 miles. The company has 31 horse and electric cars, and a 5-cent fare is charged except on the long Waikiki line, where the fare is 10 cents. In 1899 a dividend of 5 per cent. was paid. The income for that year was \$141,396, and the working expenses, \$87,946. A new street railway was incorporated August 30, 1898, and its

franchise was approved by the President of the United States, June 25, 1900. This company is establishing a very complete plant throughout its territory, the city and district of Honolulu, and it is expected that at least 20 miles will be in operation before the close of 1901.

Banks.—On October 31, 1900, there was one national bank in operation, with capital stock, \$500,000, and circulation outstanding, \$50,000. Two territorial banks, June 30, 1900, had capital, \$900,000; deposits, \$1,818,672; and resources, \$3,152,757; and 2 private banks had capital, \$340,973; deposits, \$1,277,502; and resources, \$1,643,124. The only foreign bank having a branch in the Territory is the Yokohama Specie Bank of Japan, which in 1900 dealt exclusively in exchange, and with Japanese subjects only. The currency in use is United States coin, silver being legal tender only to the amount of \$10.

Finances.—The assessed valuation of personal and real estate in 1898 was \$53,482,384; in 1899, \$76,166,972; in 1900, \$97,491,584. Taxes are assessed on personal and real estate at the rate of 1 per cent. *ad valorem*. The current revenue for 1898 was \$2,568,489; for 1899, \$3,345,232; for the first half of 1900, \$1,286,579. Loan receipts in 1898 amounted to \$141,000, and in 1899 to \$509,000.

Education.—In 1899 there were 143 public schools, with 344 teachers and 11,436 pupils; and 46 private schools, with 200 teachers and 4054 pupils, making a total of 169 schools, 544 teachers, and 15,490 pupils. Of the whole number of pupils in 1899, 5043 were Hawaiians, 3882 were Portuguese, 2721 were part Hawaiian, 1141 were Japanese, 1314 were Chinese, 601 were American, and 213 British. The remainder includes some Germans, Scandinavians, and other foreigners. The inmates of the industrial and reformatory school December 30, 1899, numbered 39. The expenditures for educational purposes during the biennial period ended December 31, 1899, were \$575,353.

Needs of the Territory.—Governor Sanford B. Dole, in his report dated September, 1900, shows the advantages which would accrue from the establishment of an agricultural experiment station, and calls attention to the great need for a trained forester to advise the government in regard to the protection of the forests and their extension. Congressional legislation is requested upon the following subjects: The appointment of commissioners of deeds for localities outside the Territory; the protection of Hawaiian food fishes through regulations governing the size of the meshes of nets used in taking them; the punishment of vagrancy; the further development of irrigation; the creation of counties and municipalities outside the Territory.

Government.—The governor is Sanford B. Dole, and the secretary of the Territory is Henry E. Cooper. The territorial Legislature (1901) consists of 13 Republicans, 25 Independents, and 1 Democrat. The delegate to the 57th Congress is Robert W. Wilcox, of Honolulu, an Independent.

Government Bill.—On April 25 and 27 the Senate and House respectively approved the bill submitted by a conference committee from both Houses providing a territorial form of government for Hawaii. The bill as passed presented a sharp contrast to the bill providing a civil government for Porto Rico (see *Porto Rico*) approved by Congress a few days previous; for while "the people of Porto Rico" were constituted a distinct body politic, not citizens of the United States, whose measure of self-government should in each instance depend upon the pleasure of the federal government, Hawaii was declared a federal territory with such local self-government as properly appertained thereto. The main provisions of the Hawaiian bill are as follows: All persons who were citizens of the republic of Hawaii on August 12, 1898—the day on which the sovereignty of the Hawaiian Islands passed to the United States—are henceforth to be citizens of the United States and citizens of the Territory of Hawaii. The constitution and, if not locally inapplicable or otherwise provided for, the laws of the United States "shall have the same force and effect in Hawaii as elsewhere in the United States." The laws of Hawaii—in force August 12, 1898—unless inconsistent with the laws of the United States or otherwise provided for, shall continue in effect, subject to repeal or amendment by the Legislature of Hawaii or by the United States Congress. But all contracts made in Hawaii since August 12, 1898, by which persons are held for labor service for a definite term, are declared to be null and void, and no law may be passed in any way to enforce these contracts; and previous acts of Congress "to prohibit the importation and migration of foreigners and aliens under contract or agreement to perform labor in the United States or its Territories," are extended and made applicable to the Hawaiian Islands. The Legislature of Hawaii shall consist of a Senate and House of Representatives, elections thereto to be held on the first Monday of November, 1900, and every second year thereafter. The Senate shall be composed of 15 members, to hold office for 4 years, and the House of 30 members, to hold office for 2 years. Eligibility to either House shall consist of age and residential qualifications, but members must be able to speak, read and write either the Hawaiian or English language, and all legislative proceedings shall be conducted in English.

"The Legislature shall not grant to any corporation, association, or individual any special privilege, immunity or franchise without the approval of Congress, nor shall it grant private charters." No corporation shall acquire and hold real estate in Hawaii in excess of 1000 acres, but existing vested rights in real estate shall not be impaired. No lottery or sale of lottery tickets shall be allowed, nor shall spirituous or intoxicating liquors be sold except under such regulations and restrictions as the territorial Legislature shall provide. For roads, wharves, educational and charitable and similar purposes, the Territory may incur debt not to exceed in any one year 1 per cent. of the assessed value of the taxable property of the Territory, or of the subdivision thereof wherein the improvements are made; but the total indebtedness at any time shall not exceed 7 per cent. of the assessed value of the Territory, or 3 for any subdivision thereof, nor shall any bond or other instrument of indebtedness be incurred unless made payable in not more than 15 years, nor unless approved by the President of the United States. The governor of the island is to be a citizen of Hawaii, appointed by the President for four years with the consent of the Senate. All the powers and duties which by the laws of the republic of Hawaii were vested in the president, or his cabinet or executive council, are to be exercised by the governor except as these are inconsistent with the Constitution and laws of the United States or are otherwise provided for. The President shall nominate, with the consent of the Senate, justices of the Supreme and judges of the Circuit Court; and the governor shall nominate with the consent of the territorial Senate an attorney-general, treasurer, commissioners of public lands, agriculture and forestry, and boards of a public character created by law. All these officials are to be appointed for 4 years and are to be citizens of the Territory of Hawaii. The judicial power of the Territory is to be vested in a Supreme Court, Circuit Court, and superior courts established at the discretion of the Legislature. The laws of the republic of Hawaii relative to the judicial department are, in general, to be continued in force subject to modifications by Congress or the territorial Legislature. But all juries hereafter shall be constituted without reference to race or place of birth, except that no jury shall be impanelled exclusively from persons of any race, and except that no person shall be accepted as a juror who cannot understandingly speak, read and write the English language.

A federal district court is to be established, the judge, attorney, and marshal thereof to be appointed by the President for six years. This court is to have, in addition to the ordinary jurisdiction of district courts of the United States, jurisdiction of all cases cognizable in a Circuit Court of the United States. Writs of error and appeal from this court shall be taken to the Circuit Court of Appeals in the ninth judicial district. The voters of Hawaii shall elect a delegate to the House of Representatives, which delegate shall have a seat in that body, but shall not be entitled to vote. The wharves, landings, roadsteads, and harbors constructed or controlled by the Republic of Hawaii, and the public property ceded to the United States on August 12, 1898, shall remain in the possession, use and control of Hawaii until otherwise provided for by federal authority. All vessels which carried Hawaiian registers on August 12, 1898, and which were owned *bona fide* by the citizens of Hawaii or by citizens of the United States, shall be entitled to be registered as American vessels, and the coasting trade between the islands and any other portion of the United States shall be regulated in accordance with the provisions of law applicable to such trade between any two great coasting districts. For the purposes of naturalization, residence in the Hawaiian islands prior to the taking effect of this act shall be deemed equivalent to residence in the United States and in the Territory of Hawaii, but all other provisions of the laws of the United States relating to naturalization shall, so far as applicable, apply to the persons of those islands. Chinese living in the Hawaiian islands when this act takes effect may, within one year thereafter, obtain certificates of residence as required by acts of Congress, and until the expiration of that year they shall not be deemed to be unlawfully in the United States if found without these certificates. But no Chinese laborer, with or without a certificate, shall be allowed to enter any other part of the United States from the Hawaiian islands.

In this bill the clauses of most immediate importance to Hawaiians are perhaps those abolishing the property qualification for voters and the contract labor system. The American element in the islands felt that the former was necessary to insure the continued political dominance of the conservative whites, and that the latter was required for the sugar industry. General satisfaction was expressed, however, by the continuance in effect of most of the existing laws of Hawaii, and by the stipulation that the officials appointed by the President should be citizens of Hawaii, thus avoiding "carpet-bag" government. A noticeable feature of the bill is its stipulation that Hawaiian franchises shall be under the control of Congress.

HAWKINS, FREDERICK, an English writer, member of the editorial staff of the *London Times*, died early in July, 1900. When he was 20 years old he published a

biography of *Edmund Kean* in two volumes. He assisted in establishing the *Theatre*, begun as a weekly paper in 1877 and later becoming a monthly review, and was its editor until it ceased publication in 1898. His other published works are the *Annals of the French Stage from its Origin to the Death of Racine* (1884), and *The French Stage in the Eighteenth Century* (1888).

HAY. The following table, published by the Department of Agriculture, division of statistics, shows the acreage, production and value of hay in the United States in 1900:

STATES AND TERRITORIES.	Acreage.	Yield per acre.	Production.	Value per ton.	Total value.
	<i>Acres.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Dollars.</i>	<i>Dollars.</i>
Maine.....	287,774	.90	848,997	12.95	10,992,781
New Hampshire.....	594,076	.87	518,566	13.50	8,002,088
Vermont.....	850,100	1.24	1,066,524	11.05	11,785,090
Massachusetts.....	507,079	.97	550,067	17.40	9,571,366
Rhode Island.....	73,278	.92	68,496	18.70	1,282,452
Connecticut.....	490,287	.80	427,411	16.73	7,150,586
New York.....	4,139,261	.81	3,357,981	14.05	47,066,474
New Jersey.....	380,118	1.28	499,102	16.06	8,010,567
Pennsylvania.....	2,429,601	1.19	2,872,561	13.90	37,148,568
Delaware.....	45,348	.98	44,441	13.85	619,957
Maryland.....	277,582	1.09	302,222	14.05	4,267,229
Virginia.....	507,873	1.16	589,133	13.90	7,980,469
North Carolina.....	125,308	1.41	176,680	11.20	1,975,818
South Carolina.....	845,796	1.32	122,453	11.50	2,322,710
Georgia.....	112,566	1.69	190,237	12.75	2,435,523
Florida.....	5,346	1.20	6,418	12.70	82,327
Alabama.....	50,844	1.86	94,061	10.55	992,344
Mississippi.....	57,090	1.75	99,922	9.95	994,234
Louisiana.....	25,151	2.00	50,302	9.40	472,989
Texas.....	304,982	1.80	548,879	6.80	3,732,327
Arkansas.....	149,333	1.68	239,590	8.85	2,122,938
Tennessee.....	223,890	1.40	313,432	11.80	3,698,418
West Virginia.....	464,068	1.18	547,600	13.40	7,337,849
Kentucky.....	277,617	1.40	390,064	11.35	4,427,226
Ohio.....	1,559,242	1.06	1,662,797	11.05	18,363,407
Michigan.....	1,339,228	1.29	1,727,617	9.45	16,322,791
Indiana.....	1,374,754	1.21	1,663,452	9.75	16,218,635
Illinois.....	1,668,894	1.27	2,119,419	8.40	17,808,129
Wisconsin.....	1,059,498	1.15	1,218,354	9.65	11,757,116
Minnesota.....	1,227,021	1.16	1,423,344	6.95	9,892,291
Iowa.....	3,525,693	1.42	5,006,470	6.80	34,043,906
Missouri.....	2,145,748	1.29	2,788,015	6.95	19,227,794
Kansas.....	3,054,137	1.33	4,031,461	4.55	18,348,146
Nebraska.....	1,912,673	1.38	2,639,469	5.75	15,193,389
South Dakota.....	1,749,919	1.19	2,064,196	3.95	8,158,574
North Dakota.....	398,894	.92	267,327	5.65	1,507,299
Montana.....	369,161	1.60	590,058	8.70	5,139,735
Wyoming.....	293,718	1.68	493,446	7.30	3,602,156
Colorado.....	799,611	2.23	1,783,133	7.60	13,551,811
New Mexico.....	37,544	2.06	77,841	9.90	766,626
Arizona.....	24,862	2.31	57,431	11.30	648,970
Utah.....	192,398	2.65	509,855	7.95	4,053,347
Nevada.....	154,330	2.43	375,082	7.70	2,897,630
Idaho.....	235,394	2.80	659,168	6.50	4,284,170
Washington.....	391,894	2.16	846,491	9.50	8,041,664
Oregon.....	713,653	2.35	1,677,085	6.80	11,404,173
California.....	1,793,491	1.51	2,708,171	8.15	22,071,594
United States.....	39,132,890	1.28	50,110,906	8.89	445,588,679

HAYTI. See HAITI.

HAZELTINE, WILLIAM STANLEY, an American landscape artist, died February 2, 1900. He was born in Philadelphia in January, 1835, and after graduating at Harvard in 1854 studied art in his native city and in Düsseldorf and Rome. After living in Rome for a number of years he settled in Boston, and became a member of the National Academy of Design in 1861. His most important pictures are scenes of Italy and New England.

HAZEN, HENRY ALLEN, professor of meteorology in the United States Weather Bureau, died in Washington, D. C., January 23, 1900, at the age of 51 years. He was born in Serur, India, where his father was a missionary. He came to the United States at 10 years of age, and in 1871 graduated at Dartmouth College, where he remained until 1876, first as a student in the Thayer School of Civil Engineering and then as assistant in drawing. He then went to the Sheffield Scientific School, Yale, and from 1877 to 1880 acted as private assistant to Professor Elias Loomis in the department of physics and meteorology. In May, 1881, he joined the United States Signal Service (now the Weather Bureau); and from July, 1891,

to the time of his death was professor of meteorology. He wrote numerous meteorological papers, established tables for the reduction of barometric readings to sea level, and produced several scientific devices, including the sling psychrometer and the thermometer shelter.

HAZEN, Rev. Dr. HENRY ALLEN, the editor of the *Congregational Year Book*, died at Norwich, Vt., August 5, 1900. He was born in 1832 at Hartford, Vt., graduated from Dartmouth in 1854 and from Andover Theological Seminary three years later. His longest pastorates were at Plymouth, Lyme, and Pittsfield, in New Hampshire, and at Billerica, Mass. After 1880, devoting himself to editorial and statistical work, by his executive ability Dr. Hazen became prominent in the Congregational Church. He edited the *Congregational Quarterly* for a time, and was permanent secretary of the National Congregational Council. When the International Congregational Council met at Boston for its session last year, Dr. Hazen was secretary of that body. His published work includes *New Hampshire and Vermont*, an historical study, given as an address before the New Hampshire Historical Society in 1892.

HEALY, Right Rev. JAMES AUGUSTINE, bishop of the Roman Catholic diocese of Maine, died August 5, 1900. He was born at Macon, Ga., in 1830. After studying at the Grand Seminary at Montreal and at St. Sulpice, Paris, he was ordained in 1854. For twelve years he was rector of the cathedral at Boston, then of St. James's Church, and in 1875 succeeded to the bishopric of Maine.

HEAP, CHARLES SWINNERTON, a well-known musical composer and conductor, died at Birmingham, England, June 11, 1900, 53 years of age. At the Leipzig Conservatory he studied under Moscheles, Hauptmann, Richter, and Reinecke, and soon won a wide reputation as organist, conductor, and teacher. One of his finest compositions, *The Maid of Astolat*, was written in 1886 for the Wolverhampton Festival, which he conducted. The cantata met with such success that he was requested to write *Fair Rosamond* for the New Staffordshire Festival of 1890.

HEAT. See PHYSICS.

HEATING FROM CENTRAL STATIONS bids fair to be one of the striking developments of the next few years. During 1900 a number of such plants were completed and the construction of others commenced. The recent impetus given to the general plan, which is by no means new, has come from a desire to utilize the exhaust steam from electric light and power stations. On November 1, 1900, the Atlanta (Ga.) Railway and Power Company started a central heating plant, having about four miles of underground mains, supplying the central, or business, section of the city and a small portion of the residence section. The system utilizes the exhaust steam from the power station, which eventually will supply current for lighting as well as for railway purposes. The steam for heating enters the pipe system under a pressure of 5 pounds per square inch, and can be supplemented by live steam from the boilers at times of light load, the live steam entering the heating mains automatically through pressure-reducing valves. All the heating pipes are of wrought iron, with devices called variators placed at intervals to provide for contraction and expansion. The main heating pipe is 16 inches in diameter, and is surrounded by a 1-inch heat-insulating coating and a dead-air space of 4 inches, formed by brick side walls and arched roof, with two layers of creosoted plank between the pipe and the brick arch. The pipe is placed on rollers and guides, and is supported on brick piers. The smaller sizes of pipes are cased with fir and pine 4 inches in thickness, made of kiln-dried creosoted staves, the wooden casing being tin-lined and thoroughly coated on the outside with asphalt and pitch. Mr. Thomas Ellicott is chief engineer of the Atlanta Railway and Power Company, and the heating system was installed by the American District Steam Company, of Lockport, N. Y. This company also put in similar plants in 1900 at Wilkesburg, Penn., which is really a residence section of Pittsburg, and at Seattle, Wash. At the latter place the outside temperature on November 23, 1900, was 15° Fahrenheit above zero, and at the same time the initial steam pressure was 2½ pounds, and the pressure to customers 2 pounds. Both the Seattle and Wilkesburg plants are supplied by steam from electric-light stations. At Delaware, O., the electric light and power company started a hot-water central heating system late in 1900, using the exhaust steam from its lighting and street railway power plant to heat the water, which is circulated through the system of pipes by means of two pumps. One or more near-by buildings were heated in this way as early as 1898, but the new and extended system includes about three miles of 8, 6, and 4 inch pipe. All mains and service pipes are in duplicate, since the water must be returned to the power plant for reheating. There is a separate duplicate connection between each radiator and the street main. The underground pipes are protected by a wrapping of rock wool, made from glass-furnace waste, and are enclosed by three thicknesses of boards, with two air spaces. Over these boards are two thicknesses of tarred paper. There is a tile drain beneath the conduit,

enclosing the heating pipes. The charge for this heating service is 12½ cents per square foot of radiating surface of the house radiators. The general manager of the company is E. F. Gwyn, who is said to have devised many of the details employed.

HENNESSY, JOHN, Roman Catholic archbishop of Dubuque, died in that city March 4, 1900. He was born in Ireland in 1823, and was educated in the seminary at Carondelet, Mo., being ordained to the priesthood in 1850. In 1855 he became professor of dogmatic theology at Carondelet and superior of the seminary in 1857. From 1860 to 1866 he had charge of a parish at St. Joseph, Mo., and in the latter year was consecrated bishop of Dubuque. This was made an archdiocese in 1893.

HENRY, WILLIAM WIRT, historical student and grandson of Patrick Henry, died December 4, 1900. He was born in 1831, graduated at the University of Virginia, and became a prominent lawyer of the State. He was four terms in the Legislature, and during the latter part of his life was devoted to historical research. As president of the Virginia Historical Society and of the American Historical Society he delivered some excellent addresses on historical subjects. His chief work was the *Life, Correspondence, and Speeches of Patrick Henry*, which he published in 1891.

HEREDITY. See BIOLOGY.

HERING, CARL, president of the American Institute of Electrical Engineers, 1900-01, served as a delegate of the United States government to the International Electrical Congress at Paris in 1900. He was born in Philadelphia, March 29, 1860, and graduated in 1880 from the University of Pennsylvania, where he spent several years as assistant and as a student of electrical engineering. In 1883-84 he pursued graduate studies in electricity under Professor Kittler at Darmstadt. Mr. Hering was the only United States member of the jury of awards at the International Electrical Exposition at Vienna in 1883, and in 1884 he became assistant electrician under Professor Houston for the Philadelphia Electrical Exhibition. He also served in this connection on the scientific commission for making tests and reports. From 1885 he was actively engaged as an electrical engineer, and in 1889 he was sent by the United States government to make a report on the electrical exhibits at the Paris Exposition of 1889, again serving on the jury of award in this department. For this work he received the decoration of Officier de l'Instruction Publique from the French government. In 1890 Mr. Hering was a judge at the St. Louis Electrical Exhibition, and in 1891 he was the chairman of the delegation sent to the International Electrical Congress at Frankfort, of which he was one of the vice-presidents. He has been an editor and contributor to the electrical press, and in 1891-93 he was vice-president of the American Institute of Electrical Engineers. In 1899 he was a member of the jury of awards at the Export Exposition in Philadelphia, and at the Paris Exposition of 1900 he represented the United States in a similar capacity. Mr. Hering was also chosen vice-president at the International Electrical Congress meeting in connection with the Exposition. For seven years he has contributed to the *Electrical World* a weekly digest of current electrical literature, both European and American.

HERVEY ISLANDS. See COOK ISLANDS.

HERZEGOVINA. See BOSNIA AND HERZEGOVINA.

HERZOGENBERG, HEINRICH VON, a pianist and composer, died October 12, 1900, at Wiesbaden. He was born in Styria in 1843, and studied at the Vienna conservatory under Dessof. In 1874 he was associated in founding the Bach-Verein, and the following year became the director. From 1885 to 1888 he was professor of composition at the Berlin School of Music, and was considered one of the most eminent masters of counterpoint. His compositions, which show a profound theoretical training and a rich poetic imagination, include two symphonies, a symphonic poem, *Odysseus*, several pieces for solo, choir, and orchestra, and many songs.

HESSSELL, DR. RUDOLPH, the German scientist who has been in charge of the propagating ponds of the United States Fish Commission, died August 16, 1900, at the age of 75. He was born at Baden, Germany, studied at Heidelberg and Strassburg, and accompanied Professor Lebold in his expedition around the world for scientific research. Since 1877 Professor Hessell has lived in Washington, where he was connected with the Fish Commission.

HETOL, or SODIUM CINNAMATE. See TUBERCULOSIS.

HEWLETT, MAURICE, an English writer, published in 1900 *Richard Yea and Nay*, a pleasant romance dealing with mediæval scenes and events. Mr. Hewlett, the son of Henry Gay Hewlett, also a man of letters, was born in 1861. He studied at the London International College and at Spring Grove, Isleworth, and in 1891 was called to the bar. Of late years he has held an official position in the Board of Trade. He began his literary career with a scholarly series of Renaissance studies: *The Masque of Dead Florentines* (1895) and *Earthwork out of Tuscany*

(1895). In 1897 he wrote *Songs and Meditations*, a little book of sonnets in the Italian manner, and the following year *Pan and the Young Shepherd*. *Little Novels of Italy* was published in 1899, and in the same year his *Forest Lovers* was awarded the Academy prize. Mr. Hewlett's enthusiasm for the period of the Middle Ages and his knowledge of its characteristics give to his romances a singularly persuasive atmosphere which is enhanced by the skilful employment of an archaic phraseology. Mr. Hewlett is at present writing a new novel entitled *The Tuscan Crown*, a story of Florence at the zenith of her greatness.

HIGH TEMPERATURE THERMOMETRY. See PHYSICS (paragraph Heat).

HILL, HORACE, an English composer, died at Norwich March 15, 1900, at the age of 66 years. His best-known work is the oratorio *Nehemiah*. For more than twenty years he was chorus master at the Norwich triennial musical festivals.

HILL, JAMES J., president of the Great Northern Railroad, has during the past few years been actively engaged in the development and extension of American commerce in Asia. Mr. Hill, who has long been recognized as one of the ablest railroad men in the United States, was born in Wellington County, Ontario, September 16, 1838. Mr. Hill became vice-president of the St. Paul & Pacific Railroad in 1882, and president in 1883, the road in 1890 becoming a portion of the Great Northern system under his control and presidency. Mr. Hill successfully carried out his scheme to construct a railroad from the Great Lakes to Puget Sound, and so carefully were his plans prepared and so well managed was the enterprise that the Great Northern has never passed a dividend or defaulted on the interest of its bonds. In connection with this railroad a fleet of large passenger and freight steamers was established on the Great Lakes and operated between Duluth and Buffalo. Just as the eastern terminal at Duluth had become a centre of great activity, so it occurred to Mr. Hill to use the western end of the line at Seattle, Wash., to extend American trade across the Pacific. By means of an arrangement with the Japanese General Steamship Company, which provided for a regular service between Seattle and Japan and China, flour, grain, iron, and steel and other American products are carried to Asia at reduced rates, while the Great Northern Railroad has in course of construction a fleet of large steamers which will be as large as the *Campania* or *Lucania*. Docks and other facilities for rapid and economical handling and reshipment are being provided at Seattle which will enable this new Pacific line to compete successfully with traffic through the Suez Canal, or even with freight from Russia or Europe by the Trans-Siberian Railway. This will afford a new market for the agricultural and other interests of the western part of the United States, and is considered one of the most important commercial developments of the near future.

HILL, NATHANIEL PETER, former United States senator from Colorado, died at his home in Denver, May 22, 1900. He was born in Orange County, N. Y., in 1832, graduated at Brown University in 1857, and from 1859 to 1864 was professor of chemistry in that institution. In the latter year he went to Colorado and engaged in mining, organizing in 1867 the Colorado Smelting Company. He was mayor of Black Hawk in 1871, a member of the territorial council in 1872, and was elected as a Republican to the federal Senate for the term 1879-85. In 1891 he was a member of the International Monetary Commission.

HINSDALE, BURKE AARON, a prominent educator and professor of the science and art of teaching at the University of Michigan, died November 29, 1900. He was born in Ohio in 1837 and studied at Hiram College, where he was professor of English literature and president from 1870 to 1882. He was then appointed superintendent of the public schools of Cleveland for four years, and in 1897 was president of the National Council of Education. His writings include: *Schools and Studies* (1884); *Garfield and Education* (1881); an edition of the *Life and Works of James A. Garfield* (1882-85), and a treatise on *How to Study and Teach History*.

HISTORICAL ASSOCIATION, AMERICAN, organized in 1884, incorporated by act of Congress in 1889, had in 1900 a membership of 1650. It has published five volumes of *Papers*, now discontinued, ten annual *Reports*, and eight volumes of *Church History Papers*. The Justin Winsor prize of \$100 will be awarded in 1901 for the best unpublished monograph in the field of American history that shall be submitted on or before October 1, 1901. The prize is intended for writers who have not obtained an established reputation. The work must be based on original investigation, and be a distinct contribution to knowledge, and must conform to the accepted canons of historical research and criticism. Officers of the association for 1901: President, Charles Francis Adams; secretary, A. Howard Clark, Smithsonian Institution, Washington, D. C.

HOBBS, JOHN OLIVER (Mrs. Pearl Mary Teresa Craigie), the English author, was born in Boston, Mass., November 3, 1867, and studied in Paris and at University College, London. She is the daughter of Mr. John Morgan Richards, a wholesale

chemist of London, and her first recorded performance in print is a story entitled *Lost, A Dog*, written at the age of nine and published in Dr. Joseph Parker's *Fountain*. Her books include *Some Emotions and a Moral* (1891); *The Sinner's Comedy* (1892); *A Bundle of Life* (1894); *The Gods, Some Mortals, and Lord Wick-enham* (1895), and *School for Saints* (1897). As playwright she is known for *The Ambassador* (1899) and *A Repentance* (1899), both produced at the St. James's Theatre, London. The hard but by no means profound cynicism of her earlier work—in part induced, it may be, by unpleasant personal experiences—appears in mellowed guise in *Robert Orange* (1900), the sequel to the *School for Saints*. The times of the story are those of Disraeli—times in which Mrs. Craigie is uncommonly interested and versed; its problems are complex to a degree; and its reception has been notably favorable.

HOBLETTZELL, FETTER SERVER, ex-member of Congress from Maryland, died in Baltimore, May 2, 1900. He was born at Cumberland, Md., in 1838, began the practice of law in Baltimore in 1859, and served with the Confederate troops during the Civil War. In 1870, 1876, and 1878 he was elected to the Maryland House of Delegates, in which during his last term he was speaker. In 1880 and 1882 he was elected to the national House of Representatives.

HOBOKEN FIRE. See NEW JERSEY (paragraph Hoboken Fire).

HOCKEY, ICE. See ICE-HOCKEY.

HOFFMAN, COLONEL WICKHAM, former United States minister to Denmark, died at Atlantic City, N. J., May 21, 1900. He was a son of the prominent New York jurist, Murray Hoffman, and was born in New York City in 1821. He graduated at Harvard in 1842, served with distinction with the Union forces in the Civil War, and in 1867 was appointed to a position with the American Legation at Paris, being transferred to London in 1875 and to St. Petersburg in 1877. Having remained here for six years as *chargé d'affaires*, he was appointed by President Arthur minister at Copenhagen, in which position he served until 1885. He wrote *Camp, Court, and Siege, a Narrative of Personal Adventure During Two Wars, and Leisure Hours in Russia*.

HOHENLOHE-SCHILLINGHURST, CHLODWIG KARL VIKTOR, Prince, who resigned the chancellorship of the German Empire in October, 1900, was born in 1819 at Rottenburg on the Fulda, and in 1846 became head of the Hohenlohe-Schillinghurst branch of the princely line of Hohenlohe-Waldenbourg. After studying at Göttingen, Heidelberg, and Bonn, he was connected for a time with the Prussian administration, but in consequence of owning extensive estates in Bavaria, he passed over to the service of that government. In 1867 he became minister for foreign affairs. At this time he appeared to sympathize with the minor German states against Prince Bismarck's policy of consolidation, but it was generally felt that in reality he was favoring Prussian ambitions. His friendly attitude toward Prussia, and to a greater degree his hostility to the ultramontane policy of the Vatican council, aroused much dissatisfaction among certain parties. In regard to the latter question, he went so far as to enter into negotiations with several European cabinets for mutual protection against the encroachments of the Church in civil affairs. The increase of power in the ultramontane party in the election of 1869 resulted in his resignation from the ministry. After the Franco-Prussian War, as member of the first German *Reichstag*, Prince Hohenlohe became leader of the party that favored the alliance of Bavaria with the Hohenzollern monarchy, and followed in all particulars the policy of Bismarck. In 1874, after Count Arnim was recalled, he was appointed ambassador at Paris and was there esteemed for his diplomacy and patriotism. In 1885 he became governor of Alsace-Lorraine, succeeding General Manteuffel, and under his able administration the passport system for the suppression of intrigue between France and the annexed countries was carried out with great rigor. In 1894 he succeeded to the imperial chancellorship on the resignation of Count Caprivi. His programme has been tax reform, energetic colonial policy, strengthening of the navy, and improvement in agricultural conditions. Through his efforts the present civil code was adopted by the government. He was highly esteemed as chancellor and in general met with approval abroad and at home, but he did not show himself a man of powerful purpose. This was not required of him, since the emperor has of late been practically his own chancellor. Prince Hohenlohe was well liked by the emperor. The position of the family to which he belonged placed him almost on equal terms with the members of the imperial house. For some time previous to the prince's resignation it was evident that he was not in sympathy with the emperor's "forward" policy in imperial affairs. He was succeeded in the chancellorship by Count von Bülow.

HOLLAND. See NETHERLANDS.

HOLMAN, SILAS WHITCOMB, physicist and professor emeritus in the Massachu-

setts Institute of Technology, died April 1, 1900. He was born at Harvard, Mass., January 20, 1856, and received his early education in the schools of Cambridge, from which he entered the Massachusetts Institute of Technology. He was graduated in 1876 and was appointed assistant in the physical laboratory. The well-earned promotions to the positions of instructor (1881), assistant professor (1882), associate professor (1885), and professor (1893), followed but in 1897 Professor Holman was forced to give up his professorial duties altogether, and his name was afterward carried on the roll of the institute as professor emeritus. His useful scientific career was early interfered with by poor health, and during the latter part of his life Professor Holman was not only an invalid, but suffered from failing eyesight, which terminated in total blindness. He was especially interested in the development of methods of instruction in the physical laboratory, and also wrote a number of interesting scientific papers. He was the author of *Physical Laboratory Notes*, 7 editions (1885-95); *Lecture Notes on Heat* (1886); *Discussion of the Precision of Measurements* (1892); *Computation Rules and Logarithms* (1896); *Matter, Energy, Force, and Work* (1898). Among his investigations, one *On the Effect of Temperature on the Viscosity of Air* in 1876, and a subsequent study of the *Viscosity of Gases* are well known.

HOLMES, EDWARD L., M.D., physician and for a number of years president of the Rush Medical College, Chicago, died in that city February 12, 1900. He was born at Dedham, Mass., in 1828, and graduated from Harvard College and the Harvard Medical School. Moving to Chicago in 1856, he founded the Illinois Eye and Ear Infirmary in 1858, and two years later was appointed lecturer on diseases of the eye and ear. In 1867 he was made professor and in 1890 became president of the college.

HONDURAS, a Central American republic north of Nicaragua, borders on the Caribbean Sea and touches the Pacific at the Gulf of Conchagua. The capital is Tegucigalpa.

Area, Population, and Education.—The republic consists of 15 departments, with a total area of about 43,000 square miles and a population (1896) of about 407,000. The white inhabitants are chiefly of Spanish descent, but they represent only a small part of the population, the mass of the people being Indians. Estimated populations of the chief towns are: Tegucigalpa and Comayagua, each about 13,000; Trujillo and Yoro, each about 4000. Roman Catholicism prevails, but there is no state church and the principle of religious liberty is recognized. Primary instruction is free, secular, and nominally compulsory. In 1894 there were 449 public primary schools, with 16,072 scholars; in 1900, besides 69 private schools, there were 627 public primary schools with an attendance of 29,690, of whom about two-thirds were boys. For higher education there are 23 schools, with an attendance of about 1600, and a so-called university consisting of various departments at Tegucigalpa and Comayagua. In 1900 the reported number of periodicals and newspapers published was 18, of which Tegucigalpa had 8.

Government.—By the constitution the chief executive power is vested in a president, who is elected by popular vote for a term of four years, and is assisted by a cabinet of five members. The president in 1900 was Señor Terencio Sierra, who was inaugurated February 1, 1899. The legislative power rests with a congress of deputies, elected in the proportion of one deputy for each 10,000 inhabitants. The regular army numbers about 500 men and the national militia about 20,000.

Finance.—Revenue is mainly derived from customs duties and taxes on alcoholic liquors. Thoroughly trustworthy data on public finance are not available, but the following figures have been reported for recent fiscal years: Revenue and expenditure in 1896, 1,901,606 pesos and 2,264,586 pesos respectively; in 1897, 2,388,500 pesos and 2,400,272 pesos respectively; revenue in 1898, 3,049,365 pesos. The estimated expenditure for the fiscal year 1901 is 2,423,000 pesos. The principal of the external debt amounts to £5,398,570, but as no interest has been paid since 1872 the debt in 1899 had reached the sum of £17,834,894 (\$86,784,594), so large an amount for so small and unprogressive a country that it seems safe to say that sooner or later Honduras will repudiate it. The internal debt in 1899 was reported at 5,518,822 pesos. On October 1, 1900, the value of the peso (silver) in United States money was 45.1 cents.

Industries and Commerce.—The chief industry, agriculture, though not in a flourishing condition, is improving. The chief product is bananas, tobacco ranking second; other crops of some importance are coffee, sugar, indigo, cacao, corn, wheat, rice, beans, grapes, and citrus fruits. Cattle-breeding is carried on extensively. In the forests and uncultivated lands many valuable woods and plants abound, including aloes, tamarinds, copaiba, dye woods, medicinal plants, vanilla, cabinet woods, vegetable ivory, and the rubber tree. The mineral resources of Honduras are unusually great, and though mining has not yet been well developed the products of

this industry occupy in value first place among the exports. Though the building and improvement of roads is carried on by the government, the principal obstacle to mining development continues to be the inadequate transportation facilities. About 20 companies are engaged in mining, the silver output at present being the most valuable. Other metals and minerals that occur are gold, iron, lead, tin, copper, zinc, platinum, nickel, bismuth, coal, salt, sulphur, and opals. An exceedingly rich iron mine—probably the richest of the country—is that at Agualtaca, recently declared to be government property; the iron, which in large part is magnetic, is of superior quality and occurs in very abundant deposits at the surface of the ground. The discovery that the Mangulile region contains gold veins of uncommon richness attracted many prospectors to that district in 1900. Apparently the mineral resources of the country are sufficient to warrant the introduction of much foreign capital. The year 1900 was a peaceful one and the general economic situation was regarded as satisfactory.

The leading export is silver, others of importance being bananas, cattle, tobacco, coffee, cacao, woods, and gold. Among the chief imports are cotton goods and iron and steel wares. Foreign trade in merchandise is principally with the United States, Germany and Great Britain ranking next. Authentic figures of the total imports and exports, however, are not available, though for 1898 it has been reported that the imports amounted to over 1,600,000 pesos, and the exports about 4,782,000 pesos. The trade in merchandise with the United States has been for fiscal years: Imports—1898, \$752,203; 1899, \$832,016; 1900, \$1,181,193; exports—1898, \$784,741; 1899, \$911,849; 1900, \$988,606.

Communications.—Honduras has only one line of railway, but others have been projected. The line now in operation is 110 kilometres (68 miles) in length and connects Puerto Cortez on the Gulf of Honduras with La Pimienta by way of San Pedro Sula. An extension of this road has been projected from La Pimienta to Fonseca on the Pacific, distant about 330 kilometres (205 miles). Other railways have also been projected, but their construction, in the immediate future at least, is doubtful. In 1898 there were 244 post-offices and 155 telegraph offices, with 2732 miles of line. See CENTRAL AMERICA.

HONG KONG, an island lying off the coast of the Chinese province of Kwangtung, at the mouth of the Canton River, constitutes a British crown colony. The island, which is separated from the mainland by a strait of only half a mile in width, is about 40 miles east of Macao (Portuguese) and 90 miles south of Canton. The area is about 32 square miles and the population in June, 1898, was 254,400, of whom 15,190 were British and foreign. The colony is administered by a governor (Sir Henry A. Blake since 1897), who is assisted by an executive council and a legislative council. The city of Victoria, the capital—commonly called Hong Kong—has one of the finest harbors in the world, with fortifications, excellent docks capable of holding the largest vessels, and a water area of about 10 square miles. Hong Kong is a British military station and the headquarters of the China squadron. The imperial garrison numbers about 1800 men. The revenue of the colony accrues mainly from an opium monopoly, land taxes, and licenses. A large part of the revenue is expended for a strong police force. The public debt in 1899 amounted to £341,799. In 1898 the revenue was 2,918,159 dollars and the expenditure, 2,841,803 dollars; in 1899 the revenue and expenditure were 3,610,143 dollars and 3,162,792 dollars respectively. The dollar used is the Mexican silver coin, worth, at the end of 1900, 50.9 cents in United States money.

As Victoria is a free port there are no customs returns showing the value of trade, and only mercantile estimates are available. The larger part of the commerce of Hong Kong is in transit and practically forms a part of the trade of China. The total imports are estimated at about \$19,440,000, and the exports at about \$9,720,000 (these values representing United States money). The largest share of the trade is with Great Britain, the rest being chiefly with India, Australia, the United States, and Germany. The value, in United States money, of the imports from Great Britain in 1898 was placed at \$10,827,410, and the exports to Great Britain, \$3,535,816; in 1899, imports, \$13,083,771, and exports, \$4,297,292. The imports from the United States amounted to \$6,699,514 in 1898; \$7,787,719 in 1899; and \$9,378,239 in 1900. In the same years the exports to the United States amounted to \$992,714, \$2,399,943, and \$1,296,771 respectively. The principal articles of commerce at Hong Kong are opium, sugar, flour, cottons, oil, amber, salt, betel, sandal-wood, woollens, silk, rice, tea, and earthenware.

Hong Kong was ceded to Great Britain in 1842 after the end of the opium war. The peninsula of Kaulun, on the mainland, was acquired by treaty in 1861 and placed under the administration of the colony. In 1898 Great Britain secured a lease, dating from July 1, for 99 years, of the island of Lan-tao, and a part of the mainland, including the port of Kaulun, and embracing the waters of Mirs Bay and Deep Bay.

The area leased on the mainland comprises 376 square miles, with a population of about 100,000. This territory is administered as a part of the colony.

HOPETOUN, Seventh Earl of, the Right Hon. JOHN ADRIAN LOUIS HOPE, lord chamberlain of her majesty's household since 1898, was in 1900 appointed first governor-general of the commonwealth of Australia. He was educated at Eton, and in 1873, at the age of 13, succeeded his father, the sixth earl of Hopetoun. He was junior whip in the House of Lords from 1883-86; lord-in-waiting for the queen from 1885-89; and lord high commissioner to the general assembly of the Church of Scotland in 1887-89. In 1889, the same year that Earl Hopetoun was made G.C.M.G., he received the appointment of governor of the colony of Victoria, and held the position until 1895, when he was appointed president of the Institution of Naval Architects. It is of great advantage to the commonwealth to have for the first governor-general one who has proved his good judgment, tact, and exceptional ability in actual colonial experience. He is felt to be a fitting man for a position requiring high qualities of statesmanship.

HORSEFLESH. See Food.

HORTICULTURE. The present status of horticulture is one of remarkable activity. This activity is more marked along the lines of industrial horticulture than upon the scientific side. As horticulture is an art, or industry, based upon scientific principles, it is not surprising, especially when we consider the enormous resource of the United States, and the immediate needs of the large number of people engaged in this work, that the commercial and industrial side of the subject should be developed at a different rate than the underlying scientific problems.

The treatment of the profound scientific questions involved in horticulture, which have always received more attention by vegetable physiologists than horticulturists, can be postponed until the educational and industrial sides of the subject have become better understood. It was not until the establishment of agricultural colleges and experiment stations in the United States that horticulture received the degree of attention which it deserved, and for this reason courses of study and systematic experimental investigation in this branch are comparatively young in the United States. Much progress is being made each year in the teaching of horticulture. In some institutions, notably Wisconsin, laboratory work is being introduced, and the subject is being taken up in accordance with the objective method of teaching, which has been so long employed in other branches of science. The scope of horticulture has broadened to a considerable extent in recent years, and as a teaching subject its pedagogical value is constantly increasing, so that there is a tendency for students to select it as a subsidiary course in a general education. The numerous experiment station publications of the past year relating to horticulture predominate in matter which most largely concerns the practical horticulturists. These reports describe the great amount of work which is done each year in testing new varieties of fruits, vegetables, and other lines of investigation, which at the present time the practical horticulturist is interested in. The growing of the common varieties of plants in our newly settled Western States is often attended with problems, and the introduction and testing of varieties which will prove hardy constitutes at present a line of research which is not only necessary, but one from which valuable results are being obtained. Great difficulty has been experienced in growing American apples in certain parts of the West, on account of the severe winter killing their roots. Recent experiments seem to show that certain types of Siberian stock will prove valuable for such regions on account of their hardiness. The production of new varieties by practical horticulturists and at experiment stations is so great that many varieties of certain garden products which were extensively cultivated a few years ago have been almost entirely superseded by others. Much experimentation is being done on the testing of new varieties of plums, largely those derived from Japanese stock; and many new varieties of this fruit, which are the results of hybridization, are constantly being placed on the market. The most important work in this line is being done by Mr. Luther Burbank, of California. Considerable interest is being manifested in the matter of plant breeding in connection with horticulture, and the subject is being investigated in both a scientific and practical manner for the purpose of securing stock with greater resistance to frost and blights. Enormous amounts of money have been lost in the past by the destruction of the orange crop in Florida through the unexpected appearance of frosts; and should the researches now in progress result in the production of a more hardy type of orange stock, the benefits will be invaluable.

In southern France there have been made an interesting series of experiments with a view to diminishing the injury to the grape and vineyards from hail. There have been established cannonading stations sufficiently close together to cover large areas under cultivation, and it is firmly believed that hail-storms can be prevented by

cannonading, and the injurious effects to the vine avoided. A monthly periodical devoted to the subject of protection from hail has been established under the auspices of a congress of persons interested in the protection of the vine. (See also METEOROLOGY.) The insect introduced from Europe into California in 1899 for the purpose of fertilizing the Smyrna fig has during the past year proved a success, and the Smyrna fig industry gives promise of becoming important in California. A line of investigation which especially concerns the practical horticulturist is that relating to the suppression of fungous diseases and obnoxious insects. A large amount of work in this direction is accomplished each year by horticulturists, botanists, and entomologists, from the results of which new methods of treatment are being continually brought out which are more successful than those formerly in use, and there are being tried many new and improved mechanical devices for spraying—a form of treatment in which Americans have always excelled. The annual loss to horticultural products due to fungi and insects is enormous, but the methods of treatment already known are capable of saving a considerably large amount of this loss when they are properly and universally applied. One of the most encouraging tendencies of the time is the increasing use of remedies for these troubles, which results in a considerable saving to the horticulturist, while at the same time this practice usually induces more business-like methods in horticultural pursuits. There are issued annually spraying calendars and formulas for insecticides and fungicides from the various experiment stations in the United States, which embody the results of the latest and most approved methods of combating fungus and insect pests. These bulletins are widely distributed to practical horticulturists, and the experiment station forms a bureau of information for those who wish additional information. It is along the lines of supplying popular information in the form of bulletins, etc., to practical men that the experiment stations are doing their most important work. Horticultural progress at the present time is in a stage of development where there is a demand for instruction of an elementary nature as well as for the results of research. The horticultural department at Cornell University, under the direction of Professor L. H. Bailey, is a pioneer and leader in this direction. During the past year a professorship entitled "extension teaching" has been established at that institution for the purpose of giving instruction to horticulturists and agriculturists. This work is done through the organization of reading clubs, by correspondence, and through illustrative experiments on the farm. The department is also in close relationship with horticultural clubs, granges, and other similar organizations, and nature study leaflets, containing popular and interesting material, are widely disseminated to aid in this work. The number of people in New York who have been connected with the movement up to the present time is estimated at about 20,000. In other States nature leaflets and publications of a simple and popular nature relating to horticulture are occasionally issued by agricultural organizations. The number of such publications is constantly increasing. Most of the agricultural institutions in the United States now have short courses of study especially designed for those who wish to obtain an elementary and practical training in horticulture and agriculture. As a rule, such courses are given in the winter, but occasionally they take place during the summer. The interest manifested in such courses is growing, as is shown by the increased yearly attendance. This country is poorly supplied with special schools giving elementary training in agriculture and horticulture. In this respect it is far behind European countries, and on account of the different social and economic conditions here it is a question whether the same proportion of such elementary schools is at present needed. Two such schools, however, have within the last year been established in Connecticut and New York. The New York institution is designated "A School of Applied Agriculture and Horticulture," and is situated at Chappaqua, N. Y. The plan of the school embraces a study of scientific principles along elementary lines, and especial attention will be given to the practical details connected with the planting and care of orchards, small fruits, market gardening, greenhouse culture, etc. The new horticulturist's school in Connecticut is situated at Hartford, and will be devoted largely to practical work. The institution is connected with the handicraft school of that city, and will devote its energies to practical work, supplemented by such elementary instruction in horticulture, floriculture, botany, forestry, landscape gardening, etc., as is necessary. A new experiment station for fruit culture has been recently established under State appropriation in Missouri.

The demand for landscape architects and intelligent overseers of estates has increased to such an extent during the last few years that there has been established during the past year courses in landscape architecture at Harvard University and the Massachusetts Institute of Technology. The teaching previously done in this line has fallen to the teachers of horticulture as a secondary subject, and the time allotted to this subject in horticultural courses was, as might be expected, inadequate, and the training received was only general. The establishment of the Harvard and

Institute of Technology courses of four years' duration is the first real attempt in the United States to cover the subject in a broad and comprehensive manner. Likewise, the development of forestry (*q.v.*) is assuming increased importance; and this subject, like landscape gardening, has in the past often fallen to the lot of the horticulturist. The forestry school already established at Cornell University is making progress, and the present year will mark the establishment of a similar school at Yale University. The differentiation and development of this subject into a special branch of learning in this country under specially trained and competent foresters constitutes a notable advance—a feature which has long been recognized in the development of forestry in Europe. While it has always been beyond the province of horticulture to turn out foresters and landscape architects, the preliminary training which they receive in these branches constitutes a foundation for such work; and more particularly does it adapt them for minor positions, such as overseeing of estates and superintending of planting. Unusual activity appears to be manifested in the publication of works in horticulture and allied subjects. There is a demand for manuals and handbooks upon the growing of various crops, such as plums, mushrooms, ginseng, etc., greenhouse management and construction, crops under glass, and elementary works discussing soils, fertilizers, spraying of plants, fruit growing, etc. More interest is being shown at the present time in ornamental and landscape gardening about residences and roadside improvement than at any time previous. Two volumes of a monumental work, entitled *The Cyclopædia of American Horticulture*, by L. H. Bailey and Wilhelm Miller, have recently appeared. This work will be complete in four volumes, and it is estimated that it will contain over two thousand illustrations. The appearance of this work is an event of importance in the field of horticultural progress.

A notable feature connected with horticultural progress was the exhibit illustrating American activity at the Paris Exposition during the past year. As this was the first attempt to make a comprehensive exhibit of American horticultural products at a foreign exposition, considerable effort was made to make it one of great value. The exhibit not only consisted of horticultural implements, seeds, plants, illustrations, etc., but there was maintained a continuous fresh-fruit exhibition from May 9 until the close of the Exposition. Seventeen States were represented in the apples exhibited, and California furnished an exhibit of oranges. The apples were shipped in refrigerator compartments, and they remained in cold storage in excellent condition until ready for exhibition. The number of prizes awarded to American exhibitors in the temporary competitions was one hundred and seventy. Owing to the increased interest which the American fruit-growers have manifested in foreign markets as a means of disposing of their surplus apples, it is believed that there will be an increased demand from abroad for superior American fruit, which was so well displayed at the Exposition. In connection with the Paris Exposition there was held an International Congress of Horticulture and Viticulture, which continued three days. Among the subjects discussed were progress in greenhouse heating, the ornamentation of public squares, the art of floral decoration, plant breeding and selection, clematis and lettuce diseases, electricity and plant growths, methods of controlling the phylloxera, wine making, the relative merits of the American and European grape-vine stock, etc. It was stated during a discussion of the art of floral decoration that \$2,000,000 of horticultural products were required annually in the vicinity of Paris. A recent estimate made by a competent authority places the value of plants and cut flowers sold in Greater New York on December 24, 1900, as equal to \$750,000. The amount of Christmas evergreens, trees, mistletoe, holly, etc., sold will equal \$200,000, or practically \$1,000,000 worth of florist's produce are sold in New York during Christmas week, or one-half as much as is sold in Paris in one year. The century's progress in floriculture is shown by the fact that it was not until 1802 that the first florist and seed-house was established, and this was started on a very small scale. With the increasing knowledge relating to plant diseases and methods of combating them, and with the results of breeding and selections and improved methods of growing plants, together with new markets for our produce, the prospect for horticultural advances has never been brighter.

A loss to horticulture occurred in the death of William Saunders, for thirty-eight years superintendent of experimental gardens and grounds at the Department of Agriculture at Washington, D. C., who died September 11, 1900, at the age of 78.

The annual meeting of the section on horticulture and botany of the Association of American Agricultural Colleges and Experiment Stations was held at New Haven, November 13-15, 1900. Thirteen papers were presented.

HOT-AIR TREATMENT. During the year 1900 many experiments were made with extremely hot air as a therapeutic measure, and the world was threatened with a hot-air fad. There is at this time a consensus of medical opinion that the treatment is of benefit in cases of arthritis, sprains, synovitis, and simple inflammations of joints due to injury. It is yet undecided whether the treatment is of use in rheuma-

tism and gout. Neuralgia, neuritis, and sciatica are probably never benefited by hot air; and, of course, club-foot and paralysis did not admit of improvement under the use of such an agency. Many patients under the strong mental influence of hope and suggestion slept, in spite of pain, and fancied themselves improved by hot air, only to realize their self-deception subsequently. Hot-air treatment is given by means of an oven with a flat floor and arched roof, the entire interior being lined with asbestos. Heat is admitted at one end and distributed through a perforated place in such a way as to be equalized throughout the oven. Arrangement is made for ventilating, for allowing moisture to escape, and for regulating the heat. A hammock is slung within the oven to receive the limb or other part of the body to be treated. The part is wrapped evenly and snugly in absorbent material, such as towelling, and adjusted in the hammock. A canvas sleeve is then drawn over it, so arranged that one end fits closely about the limb and the other end closes the end of the oven. The temperature within the oven is raised to 200° and even to 400° Fahrenheit. Treatment lasts an hour, and is repeated every twenty-four or forty-eight hours. Intense reddening and profuse perspiration of the part heated, as well as perspiration of the entire body, result. Occasionally nausea occurs.

HOURS OF LABOR. See **WAGES.**

HOVEY, RICHARD, poet and professor of English at Barnard College, died February 24, 1900. He was born at Normal, Ill., May 4, 1864, and graduated at Dartmouth College in 1885, after which he studied for a year at the General Theological Seminary, New York. For a time he was an assistant in the Church of St. Mary the Virgin, New York, and then engaged in journalism, acting, and the writing of dramatic and other poetry. He projected a series of nine works, based on the Arthurian legends and entitled *Launcelot and Guenevere*. Of these, at the time of his death he had completed four—namely, the dramas *The Quest of Merlin*, *The Marriage of Guenevere*, *The Birth of Sir Galahad*, and *Taliesin*. His other works include *Songs from Vagabondia*; *More Songs from Vagabondia* (in collaboration with Mr. Bliss Carman); *Seaward*, an elegy; and *Along the Trail*, a volume of lyrics. He translated from the French the plays of Maurice Maeterlinck.

HOYT, CHARLES HALE, playwright, died November 20, 1900, at the age of 40. He was born at Concord, N. H., and graduated from Dartmouth. The farcical comedies which he introduced were extremely popular, and brought him large revenues. Their humor and their characters were taken from the ordinary phases of American life. The long list includes *A Rag Baby*; *A Hole in the Ground*; *A Brass Monkey*; *A Texas Steer*; *A Trip to Chinatown*; *A Temperance Town*; *A Stranger in New York*, and *A Parlor Match*.

HOYT, JOHN QUINCY ADAMS, formerly a prominent business man in Chicago and New York, died at his home in the latter city January 10, 1900. He was born at East Ware, N. H., December 8, 1827. He went to Chicago, where for many years he was alderman, and in 1868 removed to New York and engaged in railroad enterprises. He is especially remembered as one of the foremost promoters of the present elevated railroad system in New York City.

HUBBARD, OLIVER PAYSON, M.D., LL.D., professor emeritus of chemistry and pharmacy at Dartmouth College, died in New York City, March 9, 1900. He was born at Pomfret, Conn., in March, 1809. He graduated at Yale College in 1828, and in 1836 was appointed professor of chemistry, pharmacy, geology, and mineralogy at Dartmouth. He held this chair until 1866, when he retired for five years to lecture at large on his special subjects, and then returned to Dartmouth as professor of chemistry and pharmacy. He was made professor emeritus in 1883. In 1863-64 Professor Hubbard was a member of the New Hampshire Legislature. He was a member of the American Historical Association, and for many years was corresponding secretary of the New York Academy of Sciences. He wrote *A History of Dartmouth Medical College* and *Biographical Sketches of Yale, Class of 1828*.

HUGHES, DAVID EDWARD, F.R.S., scientist and inventor, died in London, January 22, 1900. He was born in London, May 16, 1831, of Welsh parents, who a few years later emigrated to the United States. Hughes having developed musical talents, became at the age of 19 a professor of music at Bardstown College, Kentucky, where he was also professor of natural philosophy. He invented in 1855 a type-printing telegraph, which, though adopted in the United States, was but little used. In 1863 the United Kingdom Telegraph Company of England introduced Hughes's apparatus, and in 1870 it came into the control of the post-office, when the British telegraphs were transferred to the state. It was extensively developed, and was used by the Submarine Telegraph Company to communicate with the Continent. The instrument was soon adopted by every country of Europe, and Hughes received many honors. He was also the inventor of oil insulation, as in 1859 he described

an original form of cable, in which a semi-fluid and viscous oil was used to separate two layers of gutta-percha insulation. The object of this invention was to provide for the automatic repair of flaws or punctures in the insulation, but it was never practically tried. One of the most important of Hughes's inventions was the microphone, which he brought out in 1878, just after the invention of the Bell telephone and the carbon transmitter and phonograph of Edison. With this simple instrument he was able to magnify sound to a marked degree and to cause the footsteps of an ordinary fly to be distinctly heard. To him is due the twisting of two conductors to avoid the effects of mutual induction, and the induction balance, a most sensitive and ingenious instrument. In his induction experiments he was able to transmit signals without wires a distance of 500 yards, and had these experiments been published, it is not improbable that he would now be regarded as the inventor of wireless telegraphy. Professor Hughes was a skilful experimenter, and nearly all of his apparatus he constructed in his own laboratory. He was the president of the Institution of Electrical Engineers in 1886 and for a number of years a manager of the Royal Institution. Among his many honors he received a gold medal at the Paris Exposition of 1867, the Royal Medal from the Royal Society in 1885, having been elected a member of that organization in 1880, and in 1897 he was awarded the Albert Medal of the Society of Arts. Professor Hughes never abandoned his citizenship of the United States, in spite of his long residence and the general esteem in which he was held in England; and this is said to explain why his eminent services to science were never officially recognized by the British government.

HUGUENOT SOCIETY OF AMERICA, an association of persons descended from Huguenots, founded 1883. President, Frederick J. De Peyster; secretary, Mrs. James M. Lawton. Headquarters, 105 East Twenty-second Street, New York.

HUMANE EDUCATION SOCIETY, AMERICAN, founded in 1889 for the dissemination of books, pamphlets, etc., encouraging the humane treatment of animals, had in 1900 a membership of 300. Its work is carried on in connection with the Massachusetts Society for the Prevention of Cruelty to Animals. President, George T. Angell; secretary, Joseph L. Stevens, 19 Milk Street, Boston.

HUMBERT I, RÉNIER CHARLES EMMANUEL JEAN MARIE FERDINAND EUGÈNE, King of Italy, the eldest son of King Victor Emmanuel II. and of Adelaide, Archduchess of Austria, was born at Turin, the capital of what was then the kingdom of Piedmont, on March 14, 1844, and was assassinated on July 29, 1900, at Monza, near Milan. King Humbert was a scion of the House of Savoy, the oldest and most illustrious of all the ruling families of the world. In 1859 he accompanied his father through the Austrian campaign, and was from that time associated with the protracted military and diplomatic campaigns which resulted in "free and united" Italy. In the war of 1866 King Humbert, then Prince of Piedmont, commanded an army division, and at the battle of Custoza he covered the retreat of the Italians by forming his command into squares, in the most exposed of which he took his position. For his conduct on this occasion he was awarded the gold medal of military valor. His personal courage was again shown at the Verona floods in 1882, at the Ischia earthquake in 1884, and during the epidemic of cholera at Naples in 1884, when he visited the most affected localities and personally supervised the measures of relief. In 1868 King Humbert married his cousin, Princess Marguerite of Savoy, a beautiful and gracious woman, surnamed by her devoted subjects the "Angel of Italy." For the next few years King Humbert was busied in the reorganization and enlargement of the army. In 1878 King Victor Emmanuel died, and Humbert succeeded to the throne. The financial and foreign affairs of the country were at that time in a state of considerable embarrassment. The trade relations with France involved a tariff war, the Vatican was hostile, the Italian people, having achieved the union, were, many of them, dissatisfied with it. In 1881 the occupation of Tunis by France nearly precipitated a war, and made necessary, as a "first aid to the self-preservation" of the country, extensive expenses for military forces. King Humbert commenced about this time to open negotiations with the central European Powers. On March 13, 1887, these resulted in the Triple Alliance between Italy, Austria-Hungary, and Germany. In 1888 a renewed tariff war between France and Italy seriously crippled Italian industries, and the reverses which Italian troops met in Abyssinia in 1887 and again in 1895 discredited the military and drained the exchequer. In 1898 a commercial treaty between France and Italy was signed in Paris, which, it was believed, would do much to promote Italian prosperity. It is stated, however, that the large army which the position of Italy in international politics requires is out of all proportion to the financial ability of her people. In 1898 this army numbered 324,686 men under arms and 980,168 who could be at once called out. The taxes, moreover, have been laid largely upon staple products. King Humbert scrupulously observed the constitution during his reign, and was

a thrifty and hard-working administrator. He directed much attention to agriculture and the industries, and largely contributed to the progress which these have made in Italy during the last twenty years.

King Humbert was succeeded on the throne by his only son, Victor Emmanuel Ferdinand Marie Janvier, Prince of Naples. The prince was born at Naples on November 11, 1869. His training is said to have been more rigid than that of any other prince in Europe. He has made an extensive study of military science, and speaks several languages. He was married on October 24, 1896, to Helene, third daughter of Prince Nicholas I., ruler of Montenegro, and they have one son, born in 1898.

HUNGARIAN LITERATURE. *History.*—The observation has often been made that, aside from the exhaustive treatment which the annals of their own race have received at the hands of Hungarian writers, they have produced comparatively few historical works of lasting value. An exception, however, must be made in favor of the late Professor Julius Schvarcz, who for many years has had a European reputation as an author of important works on history and constitutional law, and since 1895 until his recent death occupied the chair of ancient history at the University of Budapest. Professor Schvarcz's great work, a *History of Democracy*, on which he had been engaged over twenty years, remains unfinished, the latest volume having appeared in 1899; but he lived to see the publication of another valuable work, a voluminous *History of Greece*, which is characterized by the marked independence and originality of the author's views. The influence of Professor Schvarcz is plainly seen in a still more recent *History of the Greeks*, by Professor Gyula Gyomlai, a readable volume, confessedly based upon the results of Professor Schvarcz's investigations. Turning to the recent contributions to national history, we note a valuable monograph on the *History of Budapest in the Eighteenth Century*, by Ignaz Peisner, whose discriminating use of the wealth of available material has resulted in a volume not only authoritative, but as entertaining as fiction. A leading Hungarian statesman, Alexander Matlekovits, who already has a number of valuable works to his credit, has recently added still another, *The Kingdom of Hungary*, which traces the development of the country since the proclamation of its independence in 1867. *The History of Hungarian Education under Maria Theresa* is the title of an important little volume by Ernő Fináczy, which forms a useful supplement to a work well known in Hungary, Molnar's *History of Public Instruction in Hungary*.

Biography and Criticism.—A publication which possesses the double interest of history and biography is the comprehensive edition of Kossuth's writings, edited by his son Ferencz, which has now reached its seventh volume. Much of Kossuth's political correspondence with Victor Emmanuel, Jérôme Bonaparte, and others is included in an appendix. Another important volume of correspondence is that of Ferencz Kazinczy, in course of publication by the Hungarian Academy of Science, the ninth volume of which has recently appeared. Kazinczy's memory is cherished especially for his aid in promoting the restoration of the Magyar language, in place of Latin, and his writings are to-day counted among the Hungarian classics. Another famous author, Emerich Madách has been made the subject of a comprehensive and appreciative monograph by Melchior Palágyi, while a new and critical edition of Madách's most important poem, *The Tragedy of Man*, often compared to Goethe's *Faust*, has been issued by a philosophic writer, Bernát Alexander. Hitherto the standard edition of Madách's poems has been that of Paul Gyulai, better known as the biographer of the so-called "Hungarian Lessing," Michael Vörösmarty. The first centenary of Vörösmarty's birth, which took place December 1, was celebrated with all due honor, and formed the principal literary event of the month; and this was appropriately made the occasion for issuing a new edition of Gyulai's biography. Bálint Balassa, a soldier and poet of the sixteenth century, is the subject of a monograph by Paul Erdélyi. A contribution to the history of literature which deserves to be especially emphasized, because published in French as well as in Hungarian, and, therefore, accessible to a much wider circle of readers, is the volume of *Pictures of Contemporary Hungarian Literature*, intended for distribution among visitors to the Paris Exhibition. The author is a well-known lyric poet, Sándor Endrődy. It is a pity that Béla Lazar's new volume of literary criticism, *Yesterday, To-day, and To-morrow*, is not similarly accessible to foreigners. Professor Lazar is well known in Hungary as one of the editors of a leading literary journal, the *Magyar Kritika*, and in this collection of essays he has traced the tendencies of contemporary literature so admirably that Hungarian critics have pronounced them the most important literary studies since the publication of Adolf Silberstein's *In the Current of the Times*.

Poetry and Drama.—There is little that is noteworthy in the year's volumes of verse. *Wandering Clouds* is the title of a collection of about a hundred short pieces by Sándor Feleki—genuine, unaffected poetry, full of imagination and tenderness.

Emil Makai, hitherto best known as a lyric poet, has this year written a graceful comedy in verse, called the *Learned Professor Hatvany*, of considerable literary merit. Another play which attracted a good deal of notice from the critics, although mostly of an adverse nature, is Arpád Zigány's *Shakespeare*, which took far too many liberties with history to justify its claim to be a picture of Elizabethan days.

Fiction.—The novels of the year may be dismissed almost as briefly as the poems. Maurus Jókai still holds first place in popular favor, in spite of his 75 years; and the fact that he was married during the year to a bride of 20 gave additional interest to his latest story, *Aged but Not Old*. It is best described as a highly fantastic romance; and, without being autobiographical, contains a distinctly personal element, dealing as it does with the theme of love and old age. Other novels which are above the general average are Ferencz Herczeg's *Among Strangers*, supposed to be extracts from a governess's daily journal; *Blue-eyed Mrs. Dávidka*, by Géza Gárdonyi, and *The Last*, by Dezső Malonyay, best known as the biographer of the artist Munkácsy. Sándor Bródy, who is one of the most versatile as well as most popular of contemporary writers, has made no specific contribution to fiction this year; but he has undertaken an original and highly ambitious venture, to be known as the *Fehér Könyv* (The White Book), a monthly magazine, written exclusively by himself, containing essays, reviews, political articles, short stories, and serials. As was to be expected, the enterprising author is finding it almost a physical impossibility, hampered as he is with daily work upon the *Magyar Hírlap*, to issue the numbers of his journal even approximately on time; but their quality is surprisingly good. The current numbers contain a characteristic novel, *The Natural History of a Bad Woman*; short sketches of life in Budapest, and critical studies of Paul Bourget, Marie Bashkirtseff, and Gerhart Hauptmann.

HUNGARY. See AUSTRIA-HUNGARY.

HUNTER, SIR WILLIAM WILSON, M.A., L.L.D., K.C.S.I., C.I.E., an authoritative writer on India, died near Oxford, England, February 7, 1900. Born in July, 1840, he was educated at the University of Glasgow, graduating at the age of 20. After studying a short time in Paris and Bonn, he entered the Bengal civil service in 1861 and was posted in Birbhum, a remote district of Lower Bengal. He immediately undertook to collect materials for the setting forth of local history and traditions, and his labor resulted in the publication in 1868 of *The Annals of Rural Bengal*, a volume that was very favorably received. This was followed four years later by a still more important work, *Orissa*, treating of the province that contains the famous temple of Jagannath. In 1869 Hunter was deputed to formulate and execute a plan for collecting and tabulating statistics of the several provinces, of which at that time, it is said, there was little detailed and definite knowledge. Twelve years of work, with Hunter as director-general, produced statistical accounts of ten provinces, amounting to more than one hundred volumes, and *The Imperial Gazetteer of India*, a monumental work of reference, which in its second edition appeared in fourteen volumes. Though Hunter's relation to this work was chiefly that of editor, it was his mind that planned the whole and brought it to successful completion. His own production in the series is the article on India, which amounts to nearly 800 pages. From 1881 to 1887 he was a member of the viceroy's legislative council, and in 1882 was president of the Indian Education Commission. For his services he repeatedly received the thanks of the government of Bengal, the government of India, and the secretary of state for India, and in 1887 was created a knight commander of the Star of India. Among his works, besides those mentioned above, are: *The Indian Empire; A Brief History of the Indian Peoples* (1880), a work that has been translated into five vernacular languages, and of which about 90,000 copies have been sold; *England's Work in India* (1881); *The Old Missionary* (1895), "an idyl of mingled vividness and pathos;" *Life of the Earl of Mayo* (1895); *Life of the Marquis of Dalhousie*; *Life of Brian Houghton Hodgson* (1896); *The Thackerays in India* (1897). At the time of his death he had in preparation *The History of British India*, a work that he designed to complete in five volumes, but of which he had published only the first (1899). After his withdrawal from public service, he retired to Oxford.

HUNTINGTON, COLLIS POTTER, one of the great railway builders of the United States, was born October 22, 1821, at the village of Harwinton, Litchfield County, Conn., and died at his camp, Pine Knot, near Raquette Lake, N. Y., August 14, 1900. Mr. Huntington will be best remembered by the Central Pacific Railway, which he built in connection with Leland Stanford, the Crockers, and Mark Hopkins. Of this railway Mr. Huntington was the fiscal agent, to whom his associates gave unlimited power to buy, sell, borrow, loan or mortgage in their names in furtherance of the common end. The road was projected in 1859, and for the next three years Mr. Huntington busied himself in getting subsidies from California, Nevada, and the United States government, and in interesting the bankers of the East. By many

people the scheme of surmounting the Sierra Nevada was regarded as foolish and visionary, and only the overwhelming personality of Mr. Huntington, his reputation for sagacity and probity, and his agreement to stand behind the enterprise and those who invested in it if it took his last cent, rendered the organization of the company possible. As it was, the preliminary surveys were made entirely at the expense of the half-dozen men who planned the enterprise, and during the troublous days in the latter part of the Civil War and before the bonds promised by the government became available the work was pushed steadily forward by money from the same source. Work was begun on January 6, 1863, and the last spike was driven on May 10, 1869, at Promontory Point, Utah, where connection was made with the Union Pacific from Missouri Bluffs. The Central Pacific Railway, though probably the most formidable of Mr. Huntington's undertakings, was not equalled in extent by others which he took up later. At his death he left a fortune which was estimated at from \$50,000,000 to \$60,000,000, but the market value of his holdings will undoubtedly largely increase. From his early boyhood Mr. Huntington was accustomed to economy, hard work, and self-reliance. At the age of 14 he went to work for a neighbor for bed, board, clothes, and \$7 a month. All of this money he saved, as well as that which he earned the two following years. The \$175 which he had then in hand represented the capital on which all his subsequent operations were based. In his seventeenth year he bought a stock of goods in New York which he disposed of to advantage. Later he transacted business in the South, and when he was 21 he went into partnership with his brother in general merchandising at Oneonta, Otsego County, New York. In 1849, at the time of the gold fever, Mr. Huntington drew \$1200 from the business and started for California by way of the isthmus. Before taking steamer from the isthmus he more than trebled his capital trading there. In Sacramento Mr. Huntington soon became known as one of the shrewdest merchants of the State. In 1854 he entered into partnership with Mark Hopkins in the hardware business, and their partnership lasted until Hopkins's death in 1876. After the completion of the Central Pacific Mr. Huntington and his associates built the Southern Pacific, from San Francisco to El Paso, through Arizona and New Mexico. They then absorbed the Texas Pacific, and branching out still further soon controlled roads extending from Ogden to San Francisco, from Portland, Ore., to San Francisco, from New Orleans to San Francisco, and from Spofford, Tex., to Durango, Mexico. In addition, they operated forty-four branches and connections along the route, besides steamship lines aggregating 7276 miles in extent. In later years Mr. Huntington assumed control of the Chesapeake & Ohio Railroad, completed it, and pushed its connections westward "until he was able to ride in his private car and over his own tracks from the gateway of the Old Dominion on the Atlantic to the Golden Gate on the Pacific." Other enterprises in which Mr. Huntington was interested were the Pacific Mail Steamship Company, with 17,000 miles of water lines and the city of Newport News, Va., which he founded, and in whose shipyard, employing 4000 men, he invested over \$7,000,000. Mr. Huntington was particularly interested in the welfare of the Indian and negro. He liberally aided the Tuskegee Institute and the Hampton (Va.) Normal Agricultural Institute. He also organized the Hampton Industrial Works for the instruction of youths in the manual arts. At the time of his death Mr. Huntington was president and director of the Southern Pacific Company, of the Pacific Mail Steamship Company, of the Southern Pacific Railroad Company of California, of the Guatemala Central Railroad Company, and director of numerous companies, among them being: the California Pacific Railroad Company; Galveston, Harrisburg & San Antonio Railroad; Gulf, Western Texas & Pacific Railway Company; Louisiana Western Railroad Company; Mexican International Railroad Company; Morgan's Louisiana & Texas Railroad & Steamship Company; Newport News Light & Water Company; Old Dominion Steamship Company; Old Dominion Land Company; Western Union Telegraph Company; International Construction Company. Mr. Huntington was not represented in the directorate of the Newport News Ship Building & Dry Dock Company, which, however, he practically controlled. In many other companies in which he was heavily interested he was represented by his brother-in-law, Isaac E. Gates, and his nephew, H. E. Huntington.

HUXLEY MEMORIAL. See BIOLOGY.

HYBRIDIZATION. See BIOLOGY and FISH AND FISHERIES.

HYDRAGOGIN. Experiments with hydragogen during 1900 have demonstrated the truth of the claims made for it. It is a combination of digitalis, strophanthus, scillipyrin and scillitoxin, together with oxysaponin. It is used in cases of dropsy of the abdomen or extremities and cardiac asthma.

HYDRAULIC CEMENT. See CEMENT, HYDRAULIC.

HYDROGEN, SOLIDIFICATION OF. See CHEMISTRY.

HYDROPHOBIA. See RABIES.

HYGIENE IN PUBLIC SCHOOLS. The Department of Health in the city of New York maintains a large corps of medical men whose duty is to examine all public and parochial schools on the morning of each school day, and to send home and report to the department all cases of contagious diseases found. It is the practice for the teachers to segregate suspected cases and hold them till the inspector appears; but in the case of disease of the eye or eruptive disease a tour of each school room is sometimes made by the inspector. During the year a controversy arose as to the duties of the department to the schools beside those here described. It was announced by the health authorities that the department is not obliged to notify teachers that there is contagious diseases in the families of the pupils, but that such notification is voluntary. At noon daily a list is sent to the office of the Board of Education containing an enumeration of the cases of contagious diseases reported in any part of the city, and their location. Notifications are then sent by the Board of Education to the schools. The inspectors of contagious diseases also notify principals of schools directly of all cases of contagious diseases brought to their notice. Principals are notified when danger of infection is passed, and pupils are returned to school with a certificate from the department. The Maryland State Dental Association is endeavoring to secure legislation which will result in periodical examination of the teeth of children in the public schools of Baltimore. See PUBLIC HEALTH; SANITATION.

ICE-BREAKING STEAMSHIPS. See ARCTIC EXPLORATION.

ICE-BOATING. See ICE-YACHTING.

ICE-HOCKEY, although a national winter sport in Canada, where there are dozens of leagues and hundreds of clubs, has been played in the United States in an organized way for only about six years, being introduced by college players at Yale and Cornell. Its rapid growth in popular favor is a deserved one, as it is one of the most vigorous and interesting games of its class. At the present time it is one of the most popular winter sports at the larger Eastern cities, such as New York, Philadelphia, Boston, Baltimore, and Pittsburg. It has been made possible throughout a long season by the artificial ice-skating rinks. The 1899-1900 championship series of the Amateur Hockey League, one of the leading promoters of the sport, held at the St. Nicholas and Clermont Avenue rinks, New York City, was won by the Crescent Athletic Club, which was victorious in all of the 10 games played. The record of the remaining teams was: New York Athletic Club, 7 games won; St. Nicholas Hockey Club, 5; Brooklyn Skating Club, 4; Hockey Club of New York, 4; and Naval Reserves, 0. The Quaker City Hockey Club, which practises in the West Park Ice Palace, Philadelphia, is now a member of the league. A second prominent league is the Intercollegiate Hockey Association, composed of Yale, Princeton, Brown, Columbia, and Pennsylvania. Harvard has a good team, which plays on a newly constructed open-air rink, similar to those in Canada, but is not a member of the league owing to the rule of the faculty against playing away from home and on non-college grounds. Yale won the second intercollegiate championship series, 1899-1900, with all 5 games; Columbia, 3 won, 2 lost; Brown and Princeton, each no games won, 3 lost, 1 tied. Before the beginning of the 1900-01 series Pennsylvania was admitted to the membership of the intercollegiate association; Cornell was invited to join, but declined, owing to the lack of suitable ice on which to practise continuously. The usual interscholastic games were played about New York. New York was again the scene of an international series. On March 23, 1900, the N. Y. Athletic Club team played and defeated the strong Ottawa Hockey Club by 3 goals to 1; on the following night the Canadians defeated an All-New York team by a score of 5 to 2. Ice-hockey is gaining ground, especially in the colleges. There is excellent reason for including it in the list of the more vigorous games at all the northeastern and middle-western colleges. See SPORTS.

ICELAND, a Danish colony, is an island of volcanic origin lying in the North Atlantic about 250 miles east of Greenland and 600 miles west of Norway. Its area is 39,756 square miles, and its population has been estimated at over 75,000. The capital is Reykjavik (population about 5000). Local executive authority is vested in a governor. The legislative power is given to the *Althing*, an assembly consisting of thirty-six members, of whom six are nominated by the crown and the remainder elected by popular vote. The Danish minister of justice is also minister for Iceland. For many years the Icelanders have striven for a greater degree of self-government, but bills to this end have not received the approval of the crown. A compromise measure, however, which was suggested by Dr. Guðmundsson in 1897, was approved by the Danish government, but rejected by the *Althing*; this plan provided for the appointment by the crown of a special minister for Iceland who should be a native of the island and should reside at Reykjavik during the

session of the *Althing*, to which he should be responsible, while between the sessions he should have a seat in the Danish ministry at Copenhagen. The November elections returned to the *Althing* a majority in favor of this measure, which it was accordingly expected would be approved at the legislative session of 1901. The religion of the country is Lutheran. Besides common schools, there is at Reykjavik an institution for higher education, with about 100 students. The principal imports are foodstuffs, clothing, timber, hardware, tobacco, and spirits; the exports include sulphur, Iceland moss, wool, dried fish, sealskins and oil, whale oil, pumice, eider-down and bird-skins. The fishing industry is showing considerable development. In 1899 proposals were made for laying a telegraphic cable between Iceland and the Shetland or Orkney islands.

ICE TRUST. See NEW YORK.

ICE-YACHTING. The distinctive and characteristic American sport of ice-boating now centres no longer alone on the Hudson and Shrewsbury rivers and Orange Lake, near Newburgh, the traditional home of winter sportsmen in this country, but flourishes throughout the Middle West, where the season of 1900 opened at Lake Minnetonka, near Minneapolis, on December 15. The Minnetonka Ice Yacht Club now owns a fleet of over 35 boats, including some of the crack yachts from the Hudson River, and at the close of the year took possession of its new club-house, which was to be formally opened early in 1901. The Minnetonka Club had planned to come East to compete for the world's championship pennant, which has for so long been held by Hudson River yachts about Poughkeepsie, but such a trip was to be undertaken only in case of a prospect for a continued period of cold weather. Among other active organizations of the Northwest are the Oshkosh I. Y. C., and other organizations at Winnebago Lake, Wis.; the Lake St. Clair and the Kalamazoo club (Gull Lake), of Michigan; Lake Pepin, Wis., and White Bear Lake, Mich., organizations, and clubs at Madison, Wis., and Lakes Mendota and Monona, and Lac la Belle. Eastern ice-yachting districts outside the Hudson River district extend from Bar Harbor through Lakes George and Champlain and New York State to Canada.

Ice-yachting in the East in the early winter of 1900 began on January 3, when *Flaw* defeated *Hurricane* in a six-mile race in 11.45, at Red Bank, N. J. On the following day, at Orange Lake, *Snowdrift* defeated *Windward* on foul for the challenge cup of 1888, won the Kidd pennant over the same boat, and also the Van Nostrand cup. On January 6, at Long Branch, N. J., *Harold* won the South Shrewsbury Club championship; on January 9 *Get There* won the annual commodore's race, and on January 10 *Leroy* won the commodore's pennant, and *Georgie* the challenge pennant. *Zip* won the challenge pennant on January 11 at Red Bank, and *Edna M.* the Monford prizes, second class, *Georgie* winning the Monford prizes, third class. At Orange Lake, *Snowdrift* defeated *Ice Queen* for the Kidd pennant, and *Windward* defeated *Snowdrift* for the '88 challenge cup. *Georgie* won the challenge pennant on January 15 at Red Bank. On January 22 *Windward* defeated *Snowdrift* at Orange Lake for the Higginson prize. *Flying Jib* defeated *Arctic* for the O'Brien prize, and *Arctic*, on January 23, defeated *Cold Wave* for the Higginson prize. On January 24 *Windward* won the O'Brien prize from *Arctic*. Those statistics are from the *Clipper Almanac*. See SPORTS.

ICHTHYOLOGY. See FISH AND FISHERIES.

IDAHO, a northwestern State of the United States, has a land area of 84,290 square miles. The capital is Boise City. Idaho was organized as a Territory March 3, 1863, and admitted as a State July 3, 1890.

Agriculture.—Idaho is a very important grazing State. The *Bulletin* of the National Association of Wool Manufacturers estimates the wool product for 1900 as follows: Number of sheep, 2,576,240; wool, washed and unwashed, 10,321,800 pounds; scoured wool, 6,182,976 pounds. The following shows the production and value of the principal crops for 1900: Wheat, 3,104,629 bushels, \$1,428,129; oats, 1,349,845 bushels, \$539,938; barley, 399,012 bushels, \$199,506; potatoes, 684,080 bushels, \$321,518, and hay, 659,103 tons, \$4,284,170. The number of bushels of grain of all kinds raised in 1899 was 10,860,423, and during that year there were 25,000 carloads of produce shipped from the State.

Mineralogy.—The estimated yield of gold for 1900 was 100,000 fine ounces, valued at \$2,067,183; and of silver, 4,500,000 fine ounces, valued at \$2,745,000. The value of the chief mineral productions for the calendar year 1899 was: Gold, \$2,500,000; silver, \$6,103,028; lead, \$4,960,410; copper, \$60,000; total, \$13,623,438. Mining is the largest industry of the State, and a great deal of the mineral wealth is still undeveloped. The increased interest in the gold properties of the State has led to the opening of many mines that were considered of little value in the early days of the State's history. The silver-lead mines of Shoshone County are the richest in

the world. The Seven Devils region is rich in copper deposits, and is expected when fully developed to lead in the production of that metal.

Banks.—On October 31, 1900, there were 10 national banks in operation and 5 in liquidation. The active capital aggregated \$575,000; circulation, \$218,976; deposits, \$3,937,423, and reserve, \$1,643,497. The State banks, June 30, 1900, numbered 8, and had capital, \$185,500; deposits, \$537,902, and resources, \$781,465. There were 6 private banks, with capital, \$81,665; deposits, \$210,693, and resources, \$329,320.

Education.—The following table, compiled from the biennial report of the State superintendent of public instruction for the period beginning September 1, 1898, and ending August 31, 1900, contains comparative statistics of public-school education for the years 1899 and 1900.

Items.	1899.	1900.	Increase.
Number of schoolhouses, regular.....	642	729	87
" " independent.....	23	27	4
" graded schools.....	55	169	114
" ungraded schools.....	594	593	None
" teachers.....	927	1,067	140
" children of school age.....	49,864	54,839	4,975
" children enrolled.....	33,102	35,329	2,227
" volumes in libraries.....	9,418	11,927	2,509
Receipts for school purposes.....	\$502,708	\$635,780	\$133,072
Expenditures for school purposes.....	\$416,938	\$499,839	\$82,900
Total amount paid teachers.....	\$236,530	\$271,214	\$34,684
Total annual cost per pupil.....	\$7.40	\$8.81	\$1.41
Value of school property.....	\$680,358	\$855,702	\$175,344

In 1899 there were 7 public high schools, with 13 teachers and 354 students; 6 private secondary schools, with 23 teachers and 170 students, and 2 public normal schools, with 10 teachers and 151 students. The State University reported 19 professors and instructors, 104 preparatory students, 75 collegiate students, 4 graduate students, and a total income of \$65,460.

Railways.—The total new railway construction reported for the calendar year 1900 was 49.83 miles, giving the State a total mileage of 1332.98.

Finances.—In January, 1900, the assessed valuation of property was \$46,748,414. The tax levy for State purposes has been reduced from \$8.31 per \$1000 to about \$5.20 per \$1000. The gross levy for State purposes in 1899 was \$245,000. In 1900 the bonded debt of the State was \$427,500. The floating debt was all provided for, and there were sinking funds applicable to the bonded debt amounting to \$75,000. In January, 1900, the State was on a cash basis for the first time in its history.

Population.—According to the United States census, the population in 1890 was 84,385; in 1900, 161,772; increase for the decade, 77,387, or 91.7 per cent. The capital is Boise City, which is also the largest city, having a population in 1900 of 5957.

Elections.—At the State election held in 1900 Frank W. Hunt, the Democratic nominee for governor, received 28,628 votes, and D. W. Standrod, the Republican nominee, 26,468 votes. The Democratic plurality was thus 2160, while in 1898 it was nearly 4000, and in 1894 the Republican plurality for governor was over 3000. The vote for congressman resulted in the election of Thomas L. Glem, Fusionist, to succeed Edgar Wilson. The State Legislature of 1899 consisted, in the Senate, of 7 Democrats and Populists, 9 Republicans, and 5 Silver Republicans; and in the House of 30 Democrats and Populists, 12 Republicans, and 7 Silver Republicans. As a result of the State elections, the Legislature in 1901 will consist, in the Senate, of 13 Democrats and Populists, 7 Republicans, and 1 Silver Republican; in the House there will be 34 Democrats and Fusionists, 27 Republicans, and 9 Silver Republicans. The State Legislature of 1900 comprised 25 Democratic-Fusionists, 27 Republicans, 9 Silver Republicans, and 9 Populist Fusionists. In the national election of 1896 Bryan received 23,192 votes, and McKinley, 6324, thus giving a plurality to Bryan of 16,868. But in 1900 Bryan received 29,414 votes, and McKinley, 27,198, and Bryan's plurality was cut down to 2216 votes.

State Officers and National Representatives.—State officers for 1900: Executive—governor, F. Steunenberg; lieutenant-governor, J. H. Hutchinson; secretary of state, M. Patrie; treasurer, L. C. Rice; auditor, B. Sinclair; attorney-general, S. H. Hayes; superintendent of public instruction, P. French; adjutant-general, J. L. Weaver (Dem.); state engineer, D. W. Ross (Dem.).

Supreme Court: Chief justice, J. W. Huston (Rep.); associate justices, I. N. Sullivan (Rep.) and R. P. Quarles (Dem.); clerk, S. Hasbrouck (Rep.).

Congressional representative for 1900 (56th Congress): Edgar Wilson (at large).

Senators for 1900 (56th Congress): George L. Shoup (Rep.), until 1901; Henry Heitfeld (until 1903).

State officers for 1901: Executive—governor, Frank W. Hunt; lieutenant-governor, Thomas F. Terrill; secretary of state, C. J. Bassett; treasurer, John J. Plumer; auditor, Egbert W. Jones; attorney-general, Frank Martin; superintendent of education, Pernal French; commissioner of agriculture and inspector of mines, Martin Jacobs.

Supreme Court: Chief justice, Ralph P. Quarles; associate justices, Isaac N. Sullivan and Charles O. Stockbridge; clerk, Sol. Hasbrook.

Congressional representative for 1901 (57th Congress): Thomas L. Glenn (Pop.). from Paris.

Senators for 1901 (57th Congress): Henry Heitfeld (until 1903), of Lewiston; other seat vacant.

ILLINOIS, a central State of the United States, has an area of 56,650 square miles. The capital is Springfield. Illinois was organized as a Territory, March 1, 1809, and admitted as a State, December 3, 1818.

Agriculture.—The total amount of grain received in the Chicago market during 1900 was 348,000,000 bushels, as against 320,000,000 bushels in 1899. Corresponding shipments were 258,000,000 bushels in 1900 and 246,000,000 bushels in 1899. The following shows the production and value of the principal crops of the State for the calendar year 1900: Corn, 264,176,226 bushels, \$84,536,392; wheat, 17,982,068 bushels, \$11,508,524; oats, 133,642,884 bushels, \$30,737,863; barley, 342,144 bushels, \$160,808; rye, 1,270,684 bushels, \$597,221; buckwheat, 67,140 bushels, \$43,641; potatoes, 15,296,104 bushels, \$6,271,403, and hay, 2,119,419 tons, \$17,803,120. Illinois held first rank among the States as a producer of oats, second as a producer of corn, and fourth as a producer of potatoes. The *Bulletin* of the National Association of Wool Manufacturers estimated the wool product of 1900 as follows: Number of sheep, 616,037; wool, washed and unwashed, 4,004,241 pounds; wool, scoured, 2,002,121 pounds. Hogs to the number of 7,119,440 were packed and marketed at Chicago in the year ending March 1, 1900, one-fourth of the total number for the United States.

Industries.—In 1899 Illinois stood second among the States in coal mining, with a production of 24,439,019 short tons, the value of which at the mines was \$20,744,553. The total number of mines reporting was 550, and the average number of employees was 36,756. The principal quarry product was limestone, to the value of \$2,065,483. The output of pig iron aggregated 1,442,012 long tons; of Bessemer steel ingots, 1,211,246 long tons; of open-hearth steel, 246,183 long tons, and of wire nails, 1,755,568 kegs. Of the total production of iron and steel rails in the United States during 1899, Illinois produced nearly 26 per cent. The production of pig iron in 1900 was 1,363,383 tons—78,629 tons less than in 1899. Illinois and Indiana together produced 50,118 short tons of spelter in 1899, and 23,543 short tons during the first half of 1900.

During the fiscal year ended June 30, 1900, the collections of internal revenue on taxable manufactures aggregated \$52,237,729, the largest amount paid by any State. Grain and fruit distilleries in operation numbered 20. The production of fruit brandy for the fiscal year was 6094 gallons; amount of spirits rectified, 6,050,023 gallons; distilled spirits gauged, 82,572,881 gallons; production of fermented liquors, 3,809,710 barrels. Illinois produced 46,417,148 pounds of oleomargarine, more than one-third of the entire oleomargarine output of the United States. In 1899 there were 2751 manufacturers of cigars and 318 of tobacco, and the combined output for the calendar year was 266,274,928 cigars, 8,471,595 cigarettes, 436,524 pounds of plug tobacco, 2,799,272 pounds of fine-cut, 7,744,853 pounds of smoking, and 414,051 pounds of snuff.

Commerce.—During the fiscal year ended June 30, 1900, the imports of merchandise at the port of Chicago aggregated in value \$15,309,725, an increase in a year of \$3,155,911; and the exports, \$5,211,770, a decrease of \$2,463,042. The imports of gold amounted to \$214,690, and of silver, \$248,738, making the total foreign trade of the year \$20,984,923, a net gain of \$1,071,088 over 1898-99. Imports of silver at Peoria amounted to \$77,973. During the fiscal year the tonnage of the vessels engaged in the foreign trade at Chicago was: Entered, American, 182,980; foreign, 7273; total, 190,253; cleared, American, 304,194; foreign, 7828; total, 312,022; grand total, 502,275. The number of sailing vessels was 40, aggregating 13,408 tons; and of steam vessels, 113, aggregating 176,845 tons. Sailing vessels cleared numbered 109, of 48,795 tons; and steam vessels, 199, of 263,227 tons. The entrances and clearances of vessels in domestic trade are about 15,000,000 tons.

Railroads.—The new construction of railroads for the year 1900 aggregated 86.11 miles, making the total mileage of the State 11,027.47.

Banks.—On October 31, 1900, there were 241 national banks in operation and 100 in liquidation. The capital stock aggregated \$35,897,765; circulation, \$16,664,766; deposits, \$254,707,546, and reserve, \$75,093,170. The State banks July 2, 1900, numbered 155, and had capital, \$18,352,000; deposits, \$169,203,991, and resources, \$276,880,115; and private banks (June 30, 1900), 135, with capital, \$2,391,614; deposits,

\$12,944,333, and resources, \$16,820,522. Savings banks had depositors, 208,992 (estimated), and deposits, \$64,777,036, an average to each depositor of \$309.95. Exchanges at the clearing houses at Chicago, Peoria, Rockford, and Springfield in the year ended September 30, 1900, aggregated \$6,952,585,596, an increase of \$453,642,678 in a year.

Finances.—The assessment law of 1898 has been found to be inadequate to the needs of all sections of the State. This law provided that property should be assessed every four years at its full value, one-fifth of which should be reckoned as its taxable value, and also limited to 5 per cent. the aggregate of taxes in any taxing district in counties having a population of 125,000 or more. Under the operation of this law in 1899 the assessed valuation of property in the State increased \$202,000,000 above the value in 1898, when the assessed valuation was \$772,431,976. Nearly \$200,000,000 of this increase came from Chicago city and Cook County. So long as the aggregate of taxes was restricted to 5 per cent. in counties having a population of 125,000, Cook County taxpayers did not object to the increased assessment. On January 12, 1900, however, and again in April, the Supreme Court declared unconstitutional Section 49 of the Assessment law—the section which provides for the 5-per-cent. limitation. Cook County taxpayers, seeing themselves liable to the old rates of taxation upon an increased valuation of property, sought and found relief in the Board of Review, which supervises the action of the assessors, and has practically unlimited power to increase or diminish assessments. The assessed valuation of Cook County property shrunk in 1900 more than \$118,000,000. The law as it now stands, with the 5-per-cent. limitation section removed, is generally satisfactory to every county, except Cook, and further legislation will be needed before the Assessment law can be considered equitable.

The State's share of the gross receipts of the Illinois Central Railroad for the year ended October 31, 1900, was \$784,093.

Education.—In 1899 the school census showed 1,539,145 persons between the ages of 6 and 21 enumerated. The enrolment in the public schools was 945,143, and the average daily attendance, 726,782. There were 25,947 teachers and 12,762 buildings used as schoolhouses, and the estimated value of all public school property was \$49,138,724. The revenue was \$17,928,434, and the expenditures, \$17,650,606, of which \$11,435,968 was for teachers' and superintendents' salaries. There were 343 public high schools, with 1364 teachers and 37,119 students; 65 private secondary schools, with 331 teachers and 3431 students; 3 public normal schools, with 72 teachers and 1768 students, and 8 private normal schools, with 60 teachers and 1293 students. Thirty-one colleges and universities for men and for both sexes reported 808 professors and instructors and 9879 students; one school of technology reported 35 professors and instructors, 700 students, and a total income of \$100,000; and 4 colleges and seminaries for women reported 59 instructors and professors, 504 students, and a total income of \$110,202. The professional schools comprised 15 theological schools, with 104 instructors and 1177 students; 10 law schools, with 136 instructors and 1297 students, and 15 medical schools, with 630 instructors and 2999 students.

State Institutions and Charities.—The school for the feeble-minded reports 16 instructors and 725 pupils, and grounds and buildings to the value of \$350,000. On August 2, 1899, 3 free employment offices were opened in Chicago. Between that date and December 8, 1900—a period of 71 weeks—56,945 applications for employment were filed at the 3 offices; and of this number, 44,116 secured positions, while 12,829 applications remained unfilled on the latter date. The 3 offices also received 52,869 applications for help, of which 85 per cent. were filled.

The earnings of the northern penitentiary in 1900 were \$134,949, as against \$76,462 in 1897; and of the southern penitentiary, \$115,285 in 1900, as against \$84,075 in 1897.

Population.—According to the federal census, the population in 1890 was 3,826,351, and in 1900, 4,821,550, an increase for the decade of 995,199, or 26 per cent. The largest cities, with the number of inhabitants, in 1900 are as follows: Chicago, 1,698,575; Peoria, 56,100; Quincy, 36,252, and Springfield, 34,159.

The Building Trades Lockout in Chicago, next to the coal miners' strike, was the most serious labor dispute of the year in the country. It involved more than 50,000 men, and was precipitated by the Building Contractors' Council, February 5, 1900. Although many demands were presented by the employers and counter-proposals made by the trade-unionists, the chief cause of the trouble lay in the existence of the Building Trades Council, which became very obnoxious to the contractors on account of its power to call out sympathetic strikes. The importance of this body in the regulation of their mutual relations was recognized by both employers and employees, and is well shown by the following incident in the struggle: After the strike had lasted more than four months the employers submitted new terms to the Carpenters' Union, agreeing, among other things, to grant the carpenters' demand

for an increase of wages from 42 cents to 50 cents per hour on the condition, however, that the carpenters withdraw from the Building Trades Council. The propositions were rejected by the carpenters, who stated they would agree to go back at the old rate of 42 cents, but must insist on retaining their affiliation with the council. The lockout was one of the most disastrous in the history of the city, owing to its paralyzing effect on business. Not a building of importance could be completed, thousands of men were thrown out of work in allied industries, and public excitement ran high. On April 19 the mayor of the city of Chicago invited the representatives of all the interests concerned to meet him in conference and see if some settlement could not be effected. The union delegates responded, but the employers failed to appear. They issued a statement, however, saying that no settlement would be made under any circumstances on the basis of the recognition of the Building Trades Council, but that they would allow any contractor to arrange with any individual union upon terms, of which the following are the more important: 1. That there shall be no limitation as to the amount of work a man shall perform on any one day. 2. That there shall be no restriction of the use of machinery or tools. 3. No restriction of the use of any manufactured material, except prison-made. 4. No person to have the right to interfere with the workmen during working hours. 5. No prohibition of the use of apprentices. 7. All workmen to be at liberty to work for whomsoever they see fit. 8. Employers to be at liberty to employ and discharge whomsoever they see fit. 9. Eight hours to constitute a day's work. 10. The rate of daily wages to be \$4 for bricklayers, plasterers, stonecutters, gasfitters, engineers, plumbers, steam-fitters, and tile-setters; \$2 for laborers, the rates for other trades ranging between these two. 12. The agreement is to be valid for three years. 13. An arbitration clause, providing for the adjustment of possible difficulties in the future, to be made a part of the agreement. 15. The union must withdraw permanently from the Building Trades Council and agree not to be affiliated with any organization of a like character during the life of the agreement. The strike was still in force at the close of the year.

Drainage Canal.—On January 2, 1900, the Chicago Drainage Canal, begun on September 3, 1892, and costing \$33,000,000, was formally opened by the Drainage Canal Commission and their engineers. While the primary object of the canal has been to carry off Chicago sewage, through the Chicago and Desplaines rivers and thence into the Mississippi, the construction of the work is such that further excavations of the "earth sections" will render the canal suitable for the navigation of boats of not more than 22 feet draught. Prior to the building of the canal a portion of Chicago's sewage was emptied into Lake Michigan, from whence also Chicago derived her water supply. Several epidemics of zymotic diseases was the result. In 1890-91 there were 1997 deaths from typhoid fever in 12 months, a larger number than occurred in the same period in New York with a population very much larger. In 1891 the Chicago death-rate was seven times as great as that of New York, and eleven times as great as the death-rate of London. Since then the death-rate from typhoid and allied diseases has been persistently high. Upon the completion of the canal St. Louis protested that the pollution of the Mississippi, whence she drew her water, would bring about an epidemic. But as over 80 per cent. of Chicago's sewage had previously passed through the Illinois River, and in practically undiluted form, the immense dilution of the entire sewage would seem to promise rather a purification of the Mississippi. The canal proper begins at a point near Bridgeport and extends to Lockport, 29 miles distant. At the latter place are the controlling works for regulating the flow of water into the Desplaines Valley and thence into the Illinois River. The controlling works include large sluice gates and a bear-trap dam with an opening of 160 feet and a vertical oscillation of 17 feet. It is estimated that 20,000 horse-power may be derived from the falls; and the engineers recommend that the city retain control of this. The specifications of the canal require a minimum flow of 300,000 cubic feet per minute. Through the rock-predominating sections the cuttings have been made 160 feet wide at the bottom and with nearly vertical walls. The potential flow of water through these cuttings is estimated at 600,000 cubic feet per minute. So that further excavations through the earth sections would double the capacity of the canal. It is hoped that the federal government will some day undertake this, and so open up navigation from Lake Michigan to the Gulf. The people of Illinois feel that they have done their share toward this purpose, since over \$20,000,000 expense has been incurred with this end in view over and above the required cost of a simple drainage canal. An interesting problem, presented by the taking from Lake Michigan of from 300,000 to 600,000 cubic feet of water per minute, is its probable effect upon the permanent water level of the Great Lakes. Engineers variously estimate the permanent fall throughout the lakes at from 3 to 8 inches. But it is not believed that navigation will thereby be inconvenienced.

Drainage Canal Litigation.—The State of Missouri brought suit in 1900, as had

been anticipated, against the Chicago Drainage Canal District Board and the State of Illinois on the ground that the emptying of sewage from the canal into the Mississippi worked injury to the health and property of many citizens of Missouri, and thus constituted a continuing nuisance, which should be abated by injunction from the court. In the complaint, filed with the Supreme Court (United States), Missouri averred, first, that that court held original jurisdiction of the case in that a true bill had been given by one State against another, as provided for in the Constitution; and, second, that the sewage thrown into the Mississippi would make the waters of the river unfit "for drinking purposes and all other domestic and manufacturing and agricultural purposes," and would, hence, injure to a great value cities and towns in Missouri on or near the Mississippi. The State of Illinois and the Chicago Drainage Board in demurring to the bill conceded that the Chicago board was created as an agent of Illinois to build and manage the canal, but contended, nevertheless, that no suit lay between the States of Illinois and Missouri, but only between Illinois and the board, on the one side, and certain towns and citizens of Missouri, claiming to be injured, on the other; and that, therefore, under the Eleventh Amendment to the Constitution the Supreme Court (United States) had no jurisdiction of the case. The demurrer stated furthermore, first, that the immense quantity of water from Lake Michigan, flowing with and diluting the sewage in the canal, improved rather than injured the water of the Mississippi; and, second, that Missouri not having previously objected to the canal, though it had been for eleven years under construction, was now estopped from action in the matter. The decision of the court had not been handed down at the end of the year.

Railway Litigation.—On March 12, 1900, the United States Supreme Court handed down a decision denying the right of the Illinois Central Railroad to fill in and use for subsidiary railroad purposes, without the consent of the city of Chicago, submerged lands on the water front of Lake Michigan. The claim of the railroad company to these lands was mainly based upon that clause of its charter by which it was authorized to appropriate for any railroad purpose lands not exceeding two hundred feet in width throughout the length of its tracks, and to "enter upon and take possession of and use all and singular any lands, streams, and materials of every kind." The Illinois Railroad averred that this grant included submerged lands on Lake Michigan in front of property owned by the railroad in fee simple. The court held, however, that the word *lands* in the grant could not be extended to mean and include *submerged lands*, nor could the word *streams* be taken to include *harbor waters*. If such an important addition to the grant had been intended, it was difficult to understand why, in a formal contract, it had not been so specified. Besides, even though the grant were construed as maintained by the company, it would still be limited by that clause of the charter which stipulated that the company should not be authorized "to make a location of their track within any city without the consent of the common council of said city." The court held that this condition was clearly intended to apply to the locating not only of *tracks*, but of structures of any kind of railroad purposes, and that it was a valid condition and was germane to the case at issue.

In a decision handed down on April 30, 1900, the United States Supreme Court denied the right of the State of Illinois unconditionally to require all regular passenger trains to stop at county seats along their route. The case arose from a demand made by the attorney-general of Illinois upon the Cleveland, Cincinnati, Chicago & St. Louis Railroad to have a train known as the "Knickerbocker Special," and put on by that road in the interests of through traffic between New York and St. Louis, receive and discharge passengers at the county seat of Hillsboro, as provided for in an Illinois statute of 1874. The railroad declined to do this on the ground that the needs of Hillsboro were already amply provided for by local trains, and more particularly on the ground that the "Knickerbocker Special" was engaged solely in interstate commerce, and was not, therefore, within the jurisdiction of the State. The matter was thereupon taken to the courts. The Supreme Court, in deciding that the Illinois statute of 1874 acted as a direct burden upon interstate commerce, and was, therefore, unconstitutional, took occasion to review the question of the police power of the several States in its relation to interstate railroading. This police power, the court stated, would be upheld by the federal judiciary when it was "designed to secure the safety and comfort of passengers" and employees, or when, in general, it operated to the public good. Thus, State statutes (Ohio) requiring that a certain number of trains stop daily at specified places had been upheld, because these requirements did not hinder the railroad company from putting on any number of additional trains, designed for interstate commerce alone. So also the requirement (Minnesota) that a train running wholly within a State, though connecting with a train running into another State, should stop at all county seats had been confirmed as a legitimate exercise of State police power. But in the case under

discussion it appeared that the needs of State and local transportation had already been attended to, and the demand that the "Knickerbocker Special" be made additional thereto was an evident interference with interstate commerce.

Elections.—In the Illinois State elections of 1900 Richard Yates, the Republican nominee for governor, received 588,319 votes, and Alschuler, the Democratic nominee, 518,966. This gave the Republican nominee a smaller plurality than in 1896, when Tanner, the Republican nominee, ran more than 100,000 votes ahead of Altgeld, his Democratic-Populist opponent. Of the 22 congressional representatives of Illinois, 16 were returned to the 57th Congress. Of the remaining 6, William Lorimer (Rep.) was defeated by John J. Feely (Dem.); Jas. McAndrews (Dem.) was nominated and elected in place of Thomas Cusack; W. F. Mahony (Dem.) was nominated and elected in place of E. T. Noonan (Dem.); B. F. March (Rep.) was defeated by J. R. Mickey; T. J. Selby (Dem.) was nominated and elected in place of W. E. Williams (Dem.), and W. A. Rodenberg (Rep.) was defeated by F. J. Kern (Dem.). By these changes the Democratic representatives were increased from 8 to 11, so that the delegation from Illinois was evenly divided. The State Legislature in 1899 consisted, in the Senate, of 16 Democrats, 34 Republicans, and 1 Populist; and in the House of 71 Democrats, 81 Republicans, and 1 Prohibitionist. In 1901, as a result of the State elections, the Legislature will consist, in the Senate, of 32 Republicans and 19 Democrats; and in the House of 81 Republicans and 72 Democrats. In the national election Bryan was defeated by a much smaller plurality than in 1896; for in 1896 Bryan received only 464,632 votes, against 607,130 cast for McKinley. But in 1900 Bryan received 503,061 votes, and McKinley, 597,985. McKinley's plurality was thus cut down from 142,498 to 94,924.

State Officers and National Representatives.—State officers for 1900: Executive—governor, John R. Tanner; lieutenant-governor, W. A. Northcott; secretary of state, J. A. Rose; treasurer, F. K. Whittemore; auditor, J. S. McCullough; attorney-general, E. C. Akin; adjutant-general, J. N. Reece; superintendent of insurance, R. J. B. Van Cleave; superintendent of education, Alfred Bayliss—all Republicans.

Supreme Court: Chief justice, Jas. H. Cartwright (Rep.); associate justices, J. W. Wilkin (Rep.), J. N. Carter (Rep.), A. M. Craig (Dem.), J. J. Phillips (Dem.), B. D. Magruder (Rep.), C. C. Boggs (Dem.); clerks of the court, A. D. Cadwallader (Rep.), C. Mamer (Rep.), J. O. Chance (Dem.).

Congressional representatives (56th Congress): Republicans, J. R. Mann (Chicago), W. Lorimer, H. S. Boutell (Chicago), G. E. Foss (Chicago), A. J. Hopkins (Aurora), R. R. Hit (Mt. Morris), G. W. Prince (Galesburg), W. Reeves (Streator), J. G. Cannon (Danville), Vespasian Warner (Clinton), J. V. Graff (Pekin), W. A. Rodenberg, G. W. Smith (Murphysboro). Democrats, G. P. Foster (Chicago), Thomas Cusack, E. T. Noonan, W. E. Williams, B. F. Caldwell (Chatham), T. M. Jett (Hillsboro), J. B. Crowley (Robinson), J. R. Williams (Carmi).

Senators for 1900 (56th Congress): S. M. Cullom (until 1901), of Springfield, and W. E. Mason (until 1903), of Chicago.

State officers for 1901: Executive—governor, Richard Yates; lieutenant-governor, W. A. Northcott; secretary of state, James A. Rose; treasurer, M. O. Williamson; auditor, J. S. McCullough; attorney-general, H. J. Hamlin; adjutant-general, J. N. Reece; superintendent of insurance, J. R. B. Van Cleave; superintendent of education, Alfred Bayliss.

Supreme Court: Chief justice, C. C. Boggs; associate justices, J. W. Wilkin, J. N. Carter, A. M. Craig, J. J. Phillips, B. D. Magruder, John P. Hand; clerks, A. D. Cadwallader, C. Mamer, and O. J. Page. The State Legislature consists of 113 Republicans and 91 Democrats.

Congressional representatives for 1901 (57th Congress): Same as for 1900, except that J. J. Feely, J. McAndrews, and W. F. Mahoney, Democrats, from Chicago, replace, respectively, W. Lorimer, T. Cusack, and E. T. Noonan; J. R. Mickey (Dem.), from Macomb, replaces B. F. March; T. J. Selby (Dem.), from Hardin, replaces W. E. Williams, and F. J. Kern (Dem.), from Belleville, replaces W. A. Rodenberg. Republicans, 11; Democrats, 11.

Senators for 1901 (57th Congress): W. E. Mason (until 1903), and one vacancy.

ILLINOIS, UNIVERSITY OF, between Urbana and Champaign, Ill., was opened in 1868. The State university had in 1899-1900 a faculty of about 200. The student attendance is given as 2234, but this includes 148 in the summer session, 66 in the short term in agriculture, and 42 in the Saturday teachers' class, besides 227 in the university preparatory school. In the regular collegiate courses the attendance was as follows: Graduate school, 72; undergraduate colleges (which include the colleges of literature and arts, engineering, science, and agriculture, and the schools of library science and music), 898; college of law, 92; college of medicine, 580; school of pharmacy, 149. The university library, which is housed in an imposing building, contains 44,000 volumes and 3500 pamphlets. The library of the State Laboratory of Natural History and that of the Agricultural Experiment Sta-

tion contain about 9500 volumes and 17,000 pamphlets. On the account of the public land scrip donated by the national government to the State the university receives 5 per cent. interest semi-annually on about \$495,000; the present value of the entire university property and assets is estimated at \$1,600,000. The income for the year from all sources was \$483,118. See UNIVERSITIES AND COLLEGES.

IMBERT DE ST. AMAND, Baron ARTHUR LÉON, a well-known French historical writer, died in Paris June 22, 1900, at the age of 66. Entering the French Foreign Office in 1855, he became minister plenipotentiary in 1882. He is best known, however, as the author of a series of interesting sketches of *Les Femmes de Versailles* (1875-79, 5 vols.), and *Les Femmes des Tuileries* (1880-94, 27 vols.), which have been translated into English under the title *Famous Women of the French Court*. They are written in a popular style and contain some interesting revelations about the life of the Empress Josephine, Marie Louise, La Duchesse de Berry, La Duchesse d'Angoulême and others.

IMERETINSKY, Prince ALEXANDER, governor-general of Warsaw since 1897, died December 6, 1900, at the age of 63. During his administration of Poland there has been a noticeable tendency toward humanizing the policy of Russification and suppression. General of the infantry, aide-de-camp general to the czar and a member of the Council of the Empire, Prince Imeretinsky took part in the Polish insurrection of 1863 and was present at the siege of Plevna during the Turko-Russian War of 1877-78. Since that time he has held various administrative posts.

IMMIGRATION. The report of the commissioner general of immigration showed that the number of immigrants entering the United States during the fiscal year ending June 30, 1900, was greater by 136,857, or 43 per cent., than the number (311,715) entering in the preceding year. The number of immigrants who reached the United States through United States and Canadian ports in 1900 was 448,572, but to this number should be added alien cabin passengers to the number of 65,635, and also immigrants coming "unofficially" from Canada and Mexico, whose number it is impossible to estimate correctly. Of the total of 448,572, 341,712 entered at New York, 27,564 at Baltimore, 7440 at Port Townsend, Wash., 15,754 at Boston, and 23,200 through Canadian ports. A noteworthy fact of the immigration for the year was the preponderance of males over females; for while for 1899 the female immigrants stood to the males in the ratio of about 2 to 3, for 1900 they stood in the ratio of about 7 to 15. The total number of female immigrants for the fiscal year of 1899 was 116,438, and of males, 195,277. For 1900 the number of females was 144,424, and of males, 304,148. Of the immigrants of 1900, Austria-Hungary furnished 114,847, as against 62,491 for the preceding year; Italy, including Sicily and Sardinia, 100,135, as against 77,419 in 1899; Russia and Finland, 90,787, as against 60,982 in 1899; and Japan, 12,635, or an increase of 340 per cent. over the 2844 immigrants in the preceding year. Of the forty-one races which contributed to the immigration of 1900, nine contributed 85 per cent., or 116,813 of the 136,857 increase over 1899. Those races and the per cent. of increase over the preceding year in each case are shown in the subjoined table. It will be noted that the races mentioned furnished substantially as many arrivals for 1900 as the total immigration of all races (311,715) for the fiscal year 1899.

RACES.	YEAR.		INCREASES.	
	1899.	1900.	Number.	By percentages.
Croatian and Slovenian	8,632	17,184	8,552	99
Hebrew, or Jewish	37,415	60,764	23,349	62
Italian (southern), including Sicilian	65,639	64,946	18,707	28
Japanese	3,896	12,626	9,233	271
Finnish	6,097	12,612	6,515	106
Magyar	4,900	13,777	8,877	181
Polish	28,466	46,938	18,472	64
Scandinavian	23,249	32,963	9,703	41
Slovak	15,836	29,243	13,406	84
Total	198,631	310,444	116,813	...

Of all the immigrants who arrived in the United States in 1900, only 2392 belonged to any professional class; 61,443 were classed as skilled laborers of some kind; 31,949 were farm laborers; 40,311 were servants; 163,508 entered as laborers, and 134,941, including women and children, were listed as having no occupation. Some of the destinations of these emigrants were as follows: To California, 11,997; to Connecticut, 12,655; to Illinois, 27,118; to Massachusetts, 39,474; to New

Jersey, 23,024; to Michigan, 11,889; to New York, 155,267; to Ohio, 13,142; to Pennsylvania, 86,534. Of the entire 448,572 immigrants reported, 93,576 could neither read nor write, and 2097 could read but not write. The total amount of money exhibited to the inspector was \$6,657,530, or about \$14 per immigrant. Less than \$30 apiece was brought by 271,821 immigrants, and more than \$30 by 54,288. Those debarred from or refused a landing at United States ports numbered 4246; of whom 2974 were rejected as paupers, 833 as contract laborers, and 393 on account of disease. In addition to this 1616 persons were refused admission from foreign territory contiguous to the United States; of this number 960 were rejected as likely to become public charges and 622 as contract laborers.

The commissioner general recommended that such legislation be enacted as would remove the misapprehension existing "that Congress intended to establish a censorship of such aliens only as intend to permanently remain in this country, and not of all aliens applying for admission." In this connection the commissioner took occasion to point out that, contrary to general belief, Congress had enacted no legislation to restrict the volume of immigration, but had only provided for the exclusion of certain classes of aliens. Hence there was no authority in law for the exclusion of persons of anarchistic opinions, or enemies of political or social order, or polygamists. The commissioner recommended that the present law providing for the exclusion of female immigrants coming to this country under contract to enter disorderly houses be strengthened by including all prostitutes in the class so debarred. Investigations, the commissioner stated, made of the inmates of brothels in large cities showed that many of the women were recently arrived aliens.

The following table shows the number of immigrants arrived in the United States each year from 1856 to 1900, both inclusive:

PERIOD.	Immigrants arrived.	PERIOD.	Immigrants arrived.
Year ending December 31:		Year ending June 30:	
1856.....	195,857	1878.....	133,469
1857.....	245,045	1879.....	177,826
1858.....	119,501	1880.....	457,257
1859.....	118,616	1881.....	669,431
1860.....	130,237	1882.....	788,992
1861.....	86,724	1883.....	603,323
1862.....	89,007	1884.....	518,592
1863.....	174,524	1885.....	395,546
1864.....	193,195	1886.....	384,305
1865.....	247,453	1887.....	490,109
1866.....	314,917	1888.....	546,699
1867.....	310,965	1889.....	444,427
January 1 to June 30, 1868.....	138,840	1890.....	455,302
Year ending June 30:		1891.....	560,319
1869.....	352,708	1892.....	573,663
1870.....	337,303	1893.....	459,730
1871.....	321,350	1894.....	285,631
1872.....	404,906	1895.....	258,536
1873.....	459,803	1896.....	343,267
1874.....	313,389	1897.....	230,633
1875.....	227,498	1898.....	229,299
1876.....	169,986	1899.....	311,715
1877.....	141,887	1900.....	448,572

From 1820 to 1855, both inclusive, 4,212,624 alien passengers arrived. It has been estimated about 98 per cent. of the total aliens arrived were immigrants. Prior to the year 1820 no official records of the arrival of alien passengers were kept.

Arrivals from the British North American possessions and Mexico from July 1, 1885, to July 1, 1893, are not included. During the calendar years 1885 to 1891, both inclusive, 550,046 immigrant passengers arrived at Canadian ports from European countries *en route* for the United States.

IMMUNITY. See SERUM THERAPY.

IMPERIAL ACADEMY OF SCIENCES AT ST. PETERSBURG, founded 1725 on a plan of Peter the Great, comprises three divisions: (1) The physical and mathematical; (2) the Russian language and literature; (3) the historical and philological. The academy has a fine museum and a library of 180,000 volumes and 13,000 manuscripts. It receives 300,000 roubles from the government annually. It takes a high position among the learned societies of Europe.

IMPERIAL FREE ECONOMIC ASSOCIATION (Russian). See ECONOMIC ASSOCIATION, IMPERIAL FREE.

IMPORTS AND EXPORTS. See UNITED STATES and the articles on foreign countries.

INCHQUIN, Fourteenth Baron, EDWARD DONOUGH O'BRIEN, representative peer for Ireland from 1873, died April 9, 1900. Born in Dublin May 14, 1839, he was

educated at Trinity College, Cambridge. He claimed descent from Brian Boromhe, and held that he was the last surviving Irish peer directly descended from royal rank.

INDEPENDENT ORDER OF GOOD TEMPLARS. See GOOD TEMPLARS, INDEPENDENT ORDER OF.

INDEPENDENT ORDER OF ODD FELLOWS. See ODDFELLOWS, INDEPENDENT ORDER OF.

INDIA, BRITISH, in a popular sense includes the peninsula of Hindustan and Burma in Farther India; but only a part of this territory is under direct British administration, the rest being divided into numerous feudatory states under native rulers. The total area of India is 1,560,160 square miles, and the population in 1891 was 287,223,431, about three-fifths of the territory (964,993 square miles) and three-fourths of the population (221,172,952) being in what is strictly British India. The inhabitants are a conglomeration of innumerable ethnic groups and families, but may be roughly divided into four classes, the Dravidian or non-Aryan aborigines, the Aryans or Sanskrit-speaking race, the Hindus, who are a mixture of the two former races, and the Mohammedans. No less than 118 languages and dialects are spoken, of which twenty are used by more than 1,000,000 people each. The chief of these are Hindi, spoken by 85,675,373 people; Bengali, 41,343,662; Telugu, 19,885,137; Marathi, 18,892,875; Punjabi, 17,724,610; Tamil, 15,229,754; and Gujarati, 10,619,078. English was used by 238,499 people. With about one-half the territory of the United States, India has nearly four times her population. In many provinces the soil is overcrowded, the average for the peninsula being 279 to the square mile. Out of 9,000,000 peasant holdings in Bengal, 6,000,000 in 1880 ranged from two to three acres, or about one-half an acre per head. The principal towns are Calcutta, with a population of 861,764 (1891); Bombay, 821,764; Madras, 452,518; Hyderabad, 415,039; Lucknow, 273,028; Benares, 219,467; Delhi, 192,579; Cawnpore, 188,720; Lahore, 176,854; Allahabad, 175,246. The Hindu religion is professed by about three-quarters of the people (207,731,727); Mohammedanism by about one-fifth (57,321,164); Animism by 9,280,467; Buddhism by 7,131,361; Christianity by 2,284,380. Other sects are the Sikhs, 1,907,883; Jains, 1,416,638; Parsis, 89,904; Jews, 17,194. The educational system includes five universities, which are examining bodies affiliated with many colleges and schools. These are the University of Calcutta, with 3475 successful candidates on its lists; University of Madras, 1363; University of the Punjab (at Lahore), 1296; University of Bombay, 1228; University of Allahabad, 990. On March 31, 1898, there were 164 colleges, with 19,310 students, 5791 secondary and special schools, with 575,213 students; 100,507 primary schools, with 3,104,583 pupils. Over 575,000 learners of all kinds attended private institutions. Speaking in February, 1900, the viceroy, Lord Curzon, remarked that he was gratified at the triumphs gained by higher education in India, and not frightened by its failures. Within a half-century a large fraction of the natives had been taught judgment, self-reliance, freedom of thought, and healthy ideas of government.

Agriculture.—Over 180,000,000 people till the soil, and the number of those concerned with agriculture in different ways is about 200,000,000. Though the government since 1870 has established central institutions for the introduction of improved methods of cultivation, the masses still cling to their antique implements, scratching the earth with a wooden plough drawn by oxen, using neither shovel nor wheelbarrow, but carrying all burdens in baskets on their heads. Poor methods, then, and the overcrowded condition of the soil keep India in chronic danger of famine. A good harvest means only bare sufficiency; a moderate harvest, privation; a poor one, starvation. The chief crops are rice, wheat, and other food grains, cotton, jute, tea, tobacco, opium, sugar-cane, indigo, and oil seeds. In 1897-98 the total acreage of rice was 70,781,408; wheat, 19,946,164; other food grains, 92,017,559; cotton, 8,916,229; sugar-cane, 2,648,498; oil-seeds, 12,564,664; indigo, 1,366,513; tobacco, 1,048,439; opium, 592,232; tea, 465,593. According to United States consular reports, the cotton crop for 1898-99 was 2,416,503 bales, of 400 pounds each, while the estimate for 1899-1900 was 641,327 bales, one-fourth the average annual production for the last years. This, of course, is due to the drought, which has caused the failure, in great part, of all crops in India. The jute crop for 1899-1900 is estimated at 6,000,000 bales, of 400 pounds each. The United States takes 15 per cent. of the raw jute crop, and 60 per cent. of the jute manufactures in the form of gunny bags and cloth. Tea is becoming a more important product every year. In 1869, according to the United States consular reports, Great Britain took 100,000,000 pounds from China and 10,716,000 pounds from India. In 1899 China supplied only 17,000,000 pounds, and India, exclusive of Ceylon, 134,018,920 pounds. The production of coffee in 1898 was 23,750,000 pounds, a poor crop, below the average for the five years ending 1898-99, which was 30,000,000 pounds. Nearly

29,000,000 of this was exported, but a great decrease in exportation is expected on account of the prohibitive tariff which France, buying 10,000,000 pounds annually, has laid on India coffee. In 1899 nearly 82,000 square miles of forest had been reserved.

Manufactures.—The principal manufactures are those of cotton, jute, and silk, metals, glass, and pottery, employing in all nearly 20,000,000 people. The number of cotton and jute mills is rapidly increasing, and the increase will undoubtedly be accelerated with the development of coal mining, India being very rich in coal, of which over 4,000,000 tons were produced in 1898.

Commerce.—In spite of the famine throughout the country and plague at Bombay, Calcutta, and Madras, the volume of commerce for the year ending March 31, 1900, shows only a very slight falling off from that of the preceding year. The chief exports of India are cotton, both raw and in the form of yarn, jute and jute goods, rice, tea, seeds, hides and skins, opium and indigo. The principal imports are cotton yarn and goods, metals, and machinery. The total exports for 1899-1900 were Rs.1,169,262,270 (rupee=32.4 cents; see paragraph Coinage), and Rs1,201,296,540 in 1898-99. Of the exports, Rs1,089,761,870 represented the value of merchandise, Rs20,081,960 of gold and Rs59,418,440 of silver. The imports for 1899-1900 showed an increase of Rs54,000,000 over the preceding year, the figures being Rs916,703,770 against Rs862,642,980. Of the imports, Rs707,118,640 were in merchandise, Rs114,478,670 in gold and Rs95,106,460 in silver. In spite of the prophecy that the establishment of the gold standard would result in India's being drained of all its supply of gold and in its being left with an inadequate currency and reserve, there has been a steady influx of gold into the treasury. The chief countries dealing with India are the United Kingdom, which had in 1899-1900, 68.8 per cent. of the total volume of trade, Austria-Hungary, 3.4 per cent.; Russia, 3.2 per cent.; Straits Settlements, 2.8 per cent.; Belgium, 2.7 per cent.; China, 2.3 per cent., and the United States, 1.9 per cent. During the last three years American oil, according to the *London Chamber of Commerce Journal* for October, 1900, has been driven steadily from the market by Russian competition. In 1898 the importation from the United States was 24,000,000 gallons; in 1899 it had fallen to 21,000,000 gallons, and in 1900 to 12,750,000 gallons. The imports from Russia in the same time had risen from 50,600,000 gallons to 57,600,000 gallons. This decrease in American sales is due undoubtedly to the smaller cost of labor in Russia and to its proximity to the market. Over 5300 vessels were engaged in the foreign commerce in the year ending March 31, 1899, with a tonnage of 4,580,000. The principal ports are Calcutta, on the Hugli; Bombay, on the west coast; Rangoon, in Burma, and Madras, on the east coast. The frontier trade with the principal countries for the year 1899-1900 amounted to Rs70,587,070 imports and Rs56,402,780 exports. The coasting trade in 1899, excepting government property and treasures, amounted to Rs687,018,770.

Finance.—Revenue is derived from a tax on land, salt, and opium; from stamps, registration, customs, excise, and provincial rates; from forests, irrigation, the post-office, telegraphs, and mint; and from the exploitation of the railways. The chief items of expenditure are salaries and pensions, the army, the railways, administration of the revenue, irrigation, buildings and roads, famine relief and insurance, and interest on the public debt. The budget for 1898-99 was closed with a surplus of over Rs40,000,000. The budget estimates for 1899-1900 were, income, Rs1,019,615,000, and expenditure, Rs980,289,000; the closing of accounts showed a surplus for the year of Rs38,805,000, in spite of an expenditure of Rs31,236,000 for famine relief. For 1900-01 it was estimated that a surplus of Rs2,432,000 would result, making allowance for the extra expenditure of Rs50,692,000 in famine relief and Rs11,334,000 on military equipment. Later it was found out, however, that the budget would show a deficit of about Rs8,000,000. Of the total revenue, land contributes over one-fourth, the railways contribute one-fifth, the taxes on opium and salt one-seventh, stamps and excise one-tenth. Of the total expenditures, one-fourth is on the army, one-fourth on the railroads, over one-fifth on salaries and civil charges, one-tenth on the administration of the revenue, one-tenth on roads and irrigation. The public debt comprises Rs1,126,500,000 in India and Rs1,864,035,000 in England, giving a total of Rs2,990,535,000 (\$956,971,200).

Communication.—On March 31, 1900, the number of miles of railway open for traffic was 23,690. At the same time 3027 miles were under construction or sanctioned. The total capital expended on the open railways up to December 31, 1899, was \$26,729,100. The expenditures for 1898-99 were \$33,752,700, and for 1899-1900, \$33,300,440. The receipts for 1889 were \$49,270,680; the number of passengers carried was 163,000,000; the weight of freight, 40,500,000 tons. The railway system of India comprises lines owned and worked by the state, lines owned by the state and worked by companies, lines worked by guaranteed and assisted companies, lines owned by native states and worked by the states or by companies. On March 31,

1899, the state operated 5566 miles of its lines, and had 11,078 miles operated by companies. On March 31, 1899, there were 51,769 miles of telegraph lines in India. The net earnings of the post-office in 1900 amounted to Rs2,200,000.

Coinage.—On September 1, 1899, gold was made a legal tender. Contrary to expectation gold began to flow into the country, and on March 7, 1900, the currency reserve equalled nearly Rs124,000,000. In October, 1900, the government succeeded in giving the silver rupee a stable value. From January, 1899, the rupee had been hovering between twenty and twenty-one cents, and the attempt to give it a higher permanent value caused great fear that commerce with foreign countries, and especially with China, which is a silver country, would suffer. These fears, however, were not realized, and the rupee finally attained the long-desired value of 1s. 4d. (32.4 cents).

Army.—The British army in India comprises European and native troops. The army is under a commander-in-chief, and is divided into the four departments of Bombay, Madras, Bengal and Punjab, with a contingent at Hyderabad. In 1900 the army consisted of 73,039 European soldiers, 145,627 natives and 788 miscellaneous officers. Police duty and frontier service is performed by local levies and 170,000 native police under European officers. The Imperial Service troops, contributed by native states for the defence of the empire, number about 18,000. The military plans for 1900 included the complete rearmament of the forces with magazine rifles, the construction of factories and the importation of machinery for the making of lyddite, as well as the introduction of the use of war balloons. The guarding of the frontiers is still a prominent feature of military policy. The mountainous character of India's borders to the north has made necessary the thorough reorganization of the artillery branch. Light mountain batteries, possessing great portability and speed, are being rapidly substituted for heavier ordnance; and as the absence of good roads makes communication and the smooth working of the commissariat difficult, great attention has been given to the increase and perfection of the transportation facilities and trains. A great innovation was made in August, 1900, when the government decided to send to China a contingent of 14,000 native soldiers taken from among the Imperial Service troops. The objections which public opinion raised against the despatch of Sepoys to fight the Boers did not arise when the Sepoys were sent to defend civilization in China. On the part of the Indian government the move is considered wise in that it has tended to stir up the loyalty of the native princes, and to further the unification of the empire in India.

Government.—The secretary of state for India, a member of the British cabinet, has charge of Indian affairs and is assisted by a council of fifteen members. He has final control of the foreign relations of the government, its policy toward native states, its revenue and expenditures. The executive authority is vested in a viceroy or governor-general resident in India. He also has a council consisting of six members and of the commander-in-chief as an extraordinary member, each in charge of a department. There is a legislative council consisting of the members of the executive council, together with a number of members nominated by the viceroy, ranging from ten to sixteen. The provincial governments of British India at present are thirteen: Madras and Bombay under governors appointed by the crown; Bengal, the Northwest Provinces with Oudh, the Punjab, and Burma under lieutenant-governors; Assam, the Central Provinces, Berar, Ajmere Merwara, Coorg, British Baluchistan and the Andaman Islands under chief commissioners. For purposes of local administration India is divided into two hundred and fifty districts, each under a deputy commissioner or magistrate collector. The governors of Madras and Bombay are assisted by legislative and executive councils, like those of the governor-general. The present governor-general is the Right Hon. George Nathaniel Curzon, Baron of Kedleston, who was appointed in 1898 and raised to the peerage under his present title.

HISTORY.

Famine.—Toward the close of 1899 the famine in India was rapidly spreading. The failure of the winter rains during December and January caused the greatest apprehensions for the new year and led to more extensive preparations for the carrying on of relief work. These preparations were justified by the six months' drought and the widespread privations that followed. At the beginning of 1900 it was estimated that the expenditures on relief work would run from three to four crores of rupees (crore=10,000,000), but by October, 1900, ten crores had been disbursed, while Rs23,800,000 had been advanced to land owners for the purchase of seed and cattle. In the beginning of January, 1900, the viceroy reported that the crop prospects were growing worse, and that the number of people receiving relief was 2,748,000. The famine was most oppressive in the government of Bombay, in

the Bombay native states, in Berar, Baroda, Rajputana, the Central Provinces, and the Punjab; roughly speaking, in the western half of the peninsula. Bengal and Burma were well off, the other provinces in fair condition. By the middle of the month the famine had commenced to extend eastward, had invaded the Punjab native states and the Northwest Provinces, which border on Bengal. At a meeting of the legislative council, held at Calcutta January 19, the statement was made that the famine area comprised 300,000 square miles, with a population of 40,000,000, and that another 145,000 square miles were subject to general scarcity and distress. At the beginning of February some rain fell in the Northwest Provinces and the Punjab, but not enough to improve conditions; elsewhere the situation was becoming worse. Relief was being given to 3,563,000 people, of whom Bombay alone had 1,136,000, the Central Provinces, 1,491,000, and Rajputana, 232,000. Famine funds were started in India and in England, and contributions poured in from all over the world, from the United States, Germany, Africa, Siam. The weekly bulletins from the viceroy to the Indian Office became a monotonous form, beginning, "No rain. conditions growing worse," and ending with a steadily increasing number of sufferers supported by the government. On March 1 there were 4,252,000 persons on relief—1,500,000 in Bombay, 1,418,000 in the Central Provinces, over 300,000 in Rajputana, over 300,000 in Berar, over 200,000 in the Punjab. At the same time the plague broke out violently in Bombay. The famine was proving worse than that of 1897; the maximum limit of relief established in that year had long been passed; things were worse than they had ever been in India. Official reports and private accounts were filled with the usual scenes of horror—living skeletons walking the roads, children perishing by the wayside, huddled forms in foul rags baking in the sun on the ground before the walls of overcrowded poorhouses and hospitals. The weekly bulletins ran on: March 23, 4,810,000 on relief; April 6, 4,879,000; April 13, 4,976,000; April 27, 5,319,000. The plague spread to Bengal and killed 4000 persons in one week. The cattle, bought in anticipation of rain, began to die in large numbers; one district lost 1,000,000 head out of a total of 1,300,000, and the hides of the dead animals could not be brought to market because there were no oxen to drag them. In May, though conditions were somewhat improved in Madras and Mysore, the situation was only more desperate in the other places; 5,617,000 were on relief; in Rajputana 40 per cent. of the population received government subsistence; in many places grass sold as dear as grain. Toward the end of May rain began to fall in many places, but cholera came with the rain. The plague broke up famine camps, but on June 1 there were still 5,730,000 people on relief. The cholera appeared in barracks among the laborers on the public works, and in the cities. During the week of June 16, the deaths were 10,275 in Bombay and the neighboring native states; in the week of June 23 there were recorded 13,392 deaths; and in the week of June 30, 12,432 deaths. All through July western India waited for the monsoon. Rain was falling in Bengal and in the Northwest Provinces, to a smaller extent in the Punjab and the Central Provinces, but Central India, Rajputana, and the west coast were dry. The cholera spread; in Bombay 12,929 persons died during the week of July 14, and the numbers on relief in the peninsula ran up to 6,218,000. The first week of August showed the high water mark of starvation, when 6,356,000 people received aid. Then the rains began to fall all over the country; crops, though backward, gave some promise; multitudes forsook the camps and returned to the villages. The numbers on relief rapidly dropped, reaching 3,884,000 on September 21, 2,920,000 on October 29, 555,000 on November 23, and 200,000 at the end of the year. The cholera figures decreased also; for Bombay they were 11,413 on July 21, 7554 on August 17, 2464 on September 21, 1525 on September 28. In November, though rain was scarce in places, famine conditions were disappearing. In December they were practically gone. On August 24, in the legislative council at Bombay, Mr. Nugent had said, "We have been accustomed to poverty, but such dire, grinding destitution as now overwhelms us has seldom befallen a well-ordered government." The censure conveyed in these words was repeated in many places; opponents of the government and enemies of England attempted to lay the blame for the stupendous disaster on Great Britain. It was asserted in the House of Commons in May that the Indian government had overburdened the country, and had taxed it into poverty and famine. R. C. Dutt, president of the Indian National Congress, declared that India was being rack-rented to pay for wars and outrageously high salaries. In many parts of the country the government owned the land and wrung from 40 to 80 per cent. of the annual yield from the cultivators. In charges on the Indian Office, in pensions, pay, interest on the public debt, and profits on the railways, England draws out of India, it has been said, from Rs380,000,000 to Rs450,000,000 per annum, and spends almost all of this vast sum outside of the country. In answer it has been asserted that the recurring famines can only be ascribed to such physical conditions as the overcrowding of the land, the drought, and the improvidence of the Hindu farmers and laborers, who consume

all the products of a good harvest and never lay anything by for a day of need. The system of famine relief is pointed to as evidence of England's solicitude for her subjects. Relief was administered in three forms. Village relief consisted in the actual distribution of money among the sufferers. The country was divided into districts, and inspectors paid semi-monthly visits to the villages in each district, doling out money to all whose names appeared on the official lists as deserving of charity. Where the natives could not be trusted with money, kitchens were erected, where cooked rice and dal was supplied to all who came. The kitchens were mostly frequented by the children, who were amply fed at a cost of one cent a day. The great majority of sufferers were assembled in camps provided with hospitals and kitchens, where they were set to work at spinning yarn, weaving baskets, cutting grass, but most of all at building roads. There the men dug, the women carried the earth in baskets on their heads, and the children broke up the clods. Wages were paid them according to personal need and the price of grain; huts or tents were not furnished, and the people slept under trees or rolled up in mats, suffering intensely from the burning heat. Pitiful sights were, of course, common. Officers in charge of famine relief reported cases of men so weak as to be incapable of performing the slightest work, of women too emaciated and weary to give their babies milk, of "little children shrivelling up under the glare of the sun."

Slight troubles occurred during the year with marauding tribes on the Assam border, with the Mundas in Chota Nagpur, and the Maharajah of Indore. The Waziris, who had been hostile since 1897, were blockaded for two months, until they promised at Dejarat, on December 14, to pay the fine imposed and to cease pillaging. On August 22 the government removed the Maharajah of Bharatpur "owing to his vicious and intemperate habits." During the year Lord Curzon, the viceroy, issued orders forbidding native princes to go abroad without the permission of the Indian government. The reason assigned for this order was that the welfare of the people required the presence of their rulers. The real cause, it has been said, is the fear of the princes engaging in plots with Russia and other Powers.

INDIANA, an east central State of the United States, has an area of 36,350 square miles. The capital is Indianapolis. Indiana was organized as a territory July 4, 1800, and admitted as a State December 11, 1816.

Agriculture.—The following shows the production and value of the principal crops for 1900: Corn, 153,200,800 bushels, \$49,024,256; wheat, 6,411,702 bushels, \$4,488,191; oats, 44,866,035 bushels, \$10,319,188; barley, 185,533 bushels, \$87,201; rye, 485,722 bushels, \$242,861; buckwheat, 70,154 bushels, \$42,794; potatoes, 9,060,529 bushels, \$3,443,001; and hay, 1,663,452 tons, \$16,218,657. Indiana ranked sixth among the States in the production of corn. The *Bulletin* of the National Association of Wool Manufacturers estimates the wool product for 1900 as follows: Number of sheep, 647,399; wool, washed and unwashed, 4,250,094 pounds; scoured wool, 2,337,552 pounds.

Industries.—The total amount of coal mined in 1899 was 6,006,523 short tons, spot value, \$5,285,018, an increase over 1898 of 1,085,780 tons in weight and of \$1,290,100 in value. Indiana ranked sixth as a coal-producing State. Coal mines in operation numbered 136, and the average number of employees was 9712. The production of petroleum was 3,848,182 barrels, valued at \$3,363,738. Quarrying yielded limestone to the value of \$2,173,833; and sandstone, \$35,636. Indiana and Illinois together produced 50,118 short tons of spelter in 1899, and 23,543 short tons during the first half of 1900.

The annual report of the State geologist shows a decrease of 30 pounds pressure in the natural gas fields of the State during the calendar year 1900. This is stated to be the greatest falling off in any one year since gas was discovered in that section. It is predicted that the supply will be practically exhausted in four or five years. The pressure, which was originally 325 pounds, is now only 100 pounds.

During the calendar year 1899 the number of cigar factories was 812, and of tobacco factories, 78, and their combined output was 80,090,329 cigars and 261,223 pounds of tobacco. There were during the fiscal year ending June 30, 1900, 40 grain and fruit distilleries in operation. The amount of fruit brandy produced was 35,928 gallons; spirits rectified, 863,291 gallons; distilled spirits gauged, 38,337,850 gallons; and production of fermented liquors, 847,962 barrels. During the year ending March 1, 1900, the number of hogs packed and marketed at Indianapolis was 1,145,252.

Commerce.—During the fiscal year ending June 30, 1900, the imports of merchandise at the delivery ports of Evansville and Indianapolis aggregated in value \$363,436, an increase over the preceding year of \$35,675.

Railways.—The new railway construction reported for the calendar year 1900 aggregated 77.20 miles, giving the State a total mileage of 6579.35.

Banks.—On October 31, 1900, there were 125 national banks in operation and 78

in liquidation. The active capital aggregated \$14,699,235; circulation, \$7,252,680; deposits, \$62,884,202; and reserve, \$24,122,484. The State banks, July 31, 1900, numbered 96, and had capital, \$4,502,750; deposits, \$16,798,432; and resources, \$22,576,934; loan and trust companies (October 31, 1899), 12, with capital, \$2,467,000; deposits, \$3,677,329; and resources, \$7,183,120; private banks (June 30, 1900), 68, with capital, \$1,885,875; deposits, \$8,530,240; and resources, \$10,894,929; and mutual savings banks (October 31, 1899), 5, with 21,091 depositors; deposits, \$5,650,961; and resources, \$6,274,524. The exchanges at the Indianapolis clearing house for the year ending September 30, 1900, aggregated \$158,286,998, an increase of \$10,913,559 in a year; and at the Evansville clearing house, \$38,748,700, an increase of \$6,340,784; total exchanges, \$197,035,698; total increase for the year, \$17,254,343.

Finances.—The total assessed valuation of property for 1900 was \$1,335,746,698. State and county taxes for all purposes aggregated \$21,659,796. The State debt, January, 1901, was \$4,504,615.

Education.—In 1899 the school population was 755,698; number of pupils enrolled in public schools, 556,651; average daily attendance, 424,725. There were 15,488 teachers, 9983 buildings used as school-houses, and public school property valued at \$25,000,000. The public high schools numbered 362, and had 1041 teachers and 25,468 students; and the private secondary schools, 28, with 149 teachers and 2134 students. There were 2 public normal schools, with 46 teachers and 1179 students, and 10 private normal schools, with 110 teachers and 3770 students. Thirteen colleges and universities for men and for both sexes reported 281 professors and instructors and 3843 students; and 2 schools of technology reported 84 professors and instructors, 834 students, and a total income of \$201,033. The professional schools comprised 3 theological schools, with 20 instructors and 101 students; 5 law schools, with 45 instructors and 475 students; and 4 medical schools, with 122 instructors and 302 students.

Charities.—In 1900 the aggregate number of inmates of the four insane hospitals in the State was 3502. The school for the feeble minded reports 70 instructors and assistants, 601 pupils, and property to the value of \$330,000. During the year 46,369 persons received relief from the overseers of the poor, expenditures for this purpose amounting to \$209,956.

National Guard.—The national guard of Indiana, officially designated the Indiana Legion, consists of the following: Staff officers, 13; artillery, 121; and infantry, 739. The total number of troops authorized is 4601. The total number in the State liable to military service is 550,000. The State appropriation for military purposes is \$45,000.

Population.—According to the United States census, the population in 1890 was 2,192,404, and in 1900, 2,516,462, an increase during the decade of 324,058, or 14.8 per cent. The largest cities, with number of inhabitants in 1900, are Indianapolis, 169,164; Evansville, 59,007; and Fort Wayne, 45,115.

Waste of Oil and Natural Gas.—An Indiana statute of 1893 prohibiting owners of natural gas or oil wells from allowing the escape and waste of gas and oil therefrom was sustained by the Supreme Court (United States), in a decision rendered on April 9, 1900. The case arose from the action of the Ohio Oil Company, which bought property in Madison County and tapped for oil the subterranean reservoir of natural gas and oil underlying Madison, Grant, Howard, Delaware, Blackford, Tipton, Hamilton, Wells, and other counties in Indiana. The pressure under which the gas was confined in the subterranean reservoir forced the oil desired by the company up into its pipes, but the gas itself was unavoidably liberated and escaped in large quantities. The State then brought action to force the company to comply with the statute of 1893, and the State gave as special cause for its suit that many millions of dollars were invested in natural gas works in Indiana, that the gas was extensively utilized by the people for light and fuel, and that property values and employments had been widely created by and were dependent upon the supply of gas. This supply, it was added, was confined in a reservoir which all owners of overlying property had the right to tap. But as it was thus a common supply and as the continuous obtainment and utilization of the gas depended mainly upon the underground pressure, which was immediately affected by the escape of gas, certain regulations were necessary for the protection of the public and of all actual or potential share-owners of the gas, and the principal of these regulations was that violated by the Ohio Oil Company. To this the company answered, in effect, that it had as much right to bore for oil as other companies had to bore for gas; and for this purpose it had expended large sums of money. No appliances were anywhere obtainable or invented whereby the company could save gas when working for oil, and hence the company could only save the gas by deserting its plant. This the company could not be forced to do, because it would be thereby deprived of its property without due process of law in violation of the Constitution of the United States.

On this issue the case was carried to the Supreme Court. That court held in effect that if the Indiana statute was to be declared unconstitutional, then any companies or individuals might, as occasion arose, allow to be wasted by escapement any part or all of the common stock of natural gas in Indiana. But this would constitute a wholesale deprivation by such companies or individuals of the property and rights of others without due process of law, which was precisely the offence complained of by the Ohio Oil Company. It followed then that the Indiana statute operated not to unjustly deprive persons of property, but to protect and equalize the rights of all. If, as a matter of fact, the Ohio Oil Company was thereby injured, that was an unavoidable result of a legitimate exercise of State police power. The statute was therefore upheld.

Constitutional Amendments.—At the elections held in November two constitutional amendments were voted upon and received a majority vote; since, however, the amendments did not receive a majority of all the votes cast for governor, it was doubtful whether the amendments had been legally adopted. One of the amendments authorized the Legislature to pass acts prescribing the qualifications for admission to the bar, and the other changed the number of Supreme Court judges. Previously there could not be less than three or more than five; by the amendment the number is fixed at not less than five and not more than eleven.

Elections.—The State election in 1900 resulted in a victory for Winfield T. Durbin, the Republican nominee for governor, by a plurality of about 23,000 votes. The 13 representatives of Indiana to the 56th Congress were all returned to the 57th Congress, with the exception that E. S. Holliday (Republican) was nominated and elected in place of George W. Faris (Republican). The State Legislature in 1899 consisted, in the Senate, of 29 Republicans and 21 Democrats; and in the House of 57 Republicans and 43 Democrats. The Legislature of 1901 will be Republican by a large majority, and will consist, in the Senate, of 31 Republicans and 19 Democrats; and in the House, of 68 Republicans and 32 Democrats. In the national election McKinley won by a somewhat larger plurality than in 1896. In 1896 the vote cast for McKinley was 323,754, and for Bryan, 305,573. In 1900 McKinley received 336,063 votes, and Bryan 309,584. McKinley's plurality thus increased from 18,181 to 26,479.

State Officers and National Representatives.—State officers for 1900: Executive—governor, J. A. Mount; lieutenant-governor, W. S. Haggard; secretary of state, U. B. Hunt; treasurer, L. Levy; auditor, W. H. Hart; adjutant-general, J. K. Gore; attorney-general, W. L. Taylor; superintendent of instruction, F. L. Jones; commissioner of insurance, C. W. Neal; commissioner of public lands, L. G. Rothschild; chief of bureau of statistics, J. B. Conner, geologist, W. S. Blatchley—all Republicans.

Supreme Court: Chief justice, J. V. Hadley; associate justices, J. H. Jordan, A. Dowling, L. J. Monks, F. E. Baker; clerk, R. A. Brown—all Republicans.

Congressional representatives for 1900 (56th Congress): Republicans—J. A. Hem-enway (Boonville), G. W. Faris, J. E. Watson (Rushville), J. O. Overstreet (Indianapolis), G. W. Cromer (Muncie), C. B. Landis (Delphi), E. D. Crumpacker (Valparaiso), G. W. Steele (Marion), Abraham L. Brick (South Bend). Democrats—R. W. Miers (Bloomington), W. T. Zenor (Corydon), F. M. Griffith (Vevay); J. M. Robinson (Fort Wayne).

Senators for 1900 (56th Congress): C. W. Fairbanks (until 1903), of Indianapolis, and A. J. Beveridge (until 1905), also of Indianapolis—both Republicans.

State officers for 1901: Executive—governor, Winfield T. Durbin; lieutenant-governor, N. W. Gilbert; secretary of state, Union B. Hunt; treasurer, Leopold Levy; auditor, W. H. Hart; attorney-general, W. L. Taylor; superintendent of education, F. L. Jones; commissioner of insurance, auditor *ex officio*—all Republicans.

Supreme Court: Same as for 1900.

Congressional representatives for 1901 (57th Congress): Same as for 1900 except that E. S. Holliday (Brazil) replaces G. W. Faris—Republicans, 9; Democrats, 4.

Senators for 1901 (57th Congress): Same as for 1900.

INDIANA UNIVERSITY, Bloomington, Ind., founded 1820. The State University of Indiana maintains no professional schools of any kind, except law. The course of study prescribed for graduation is one which is original with the university, and consists of certain prescribed subjects, a major subject, and enough elective subjects to complete the four years' work. The prescribed work consists of a year's daily work in English, a year's work in mathematics, a year in some one science, and two years' work in language subjects. In this prescribed work there is considerable room for choice. In his major subject, in which he also has a wide range of choice, the student must complete from three to four years' study in some one department. The remainder of the student's work is elective, and includes about

one-half the course. The object of the system is to secure a fundamental uniformity for a curriculum which shall also be flexible. In the matter of election it is officially reported that such subjects as English, language, history, and economics attract a far larger student body than do either the physical or biological sciences; and that the system has improved the whole student body, by developing self-reliance and that interest which comes from responsibility, while it has also improved teaching through the stimulus of interested learners. The student attendance in 1899-1900 was 1017, of whom 69 were doing graduate work, the remainder pursuing work in the undergraduate courses in the departments of liberal arts and in the law school. In addition, the university has maintained a summer school, which in 1900 was reorganized as a summer session; and there are summer courses in the geological survey and at the biological station on Winona Lake. The university faculty numbers about 70. The library contains about 35,000 volumes and pamphlets, all of which have been purchased since the fire of 1883. The income, which includes about \$85,000, raised by a State tax of one-fifteenth of a mill on taxable property, and about \$25,000 interest from the State on endowment and bonds, amounted in 1899-1900, from all sources, to \$134,444.73. Tuition is free, except for certain contingent fees, which yield about \$10,000 annually. After January 1, 1901, these fees are to be abolished, except in the school of law. On February 7, 1900, Wylie Hall was burned, but is now being rebuilt, with an additional story, at a cost of \$30,000. A stone observatory building and a 12-inch telescope have been completed at a cost of \$12,000. There is a demand for more room in the university, and classes are being held throughout the day to provide accommodations for the students. See UNIVERSITIES AND COLLEGES.

INDIANS OF THE UNITED STATES, PRESENT CONDITION OF. *Population.*—

According to the latest official report for the year ending June 30, 1900, the present Indian population of the United States is about 268,000. The accuracy of these figures, however, depends very largely on the answer to the question, "What is an Indian?" Before the discovery of America it is reasonable to assume that every Indian was a native of unmixed aboriginal blood, but for the last four centuries there has been a constant admixture of white and negro blood, until there are now many tribes without a single full-blood, while in some of the most important tribes, notably the Cherokee, there are thousands of persons who base their claims to tribal rights upon such a small proportion of aboriginal blood as one-sixteenth, one-thirty-second, or even one-sixty-fourth. Not only are all these considered Indians before the law, but in the Five Civilized Tribes of the Indian Territory the rights of Indian citizenship are extended also to some 30,000 "adopted" negroes and whites, the negroes being the former slaves of the Indians, while the whites have generally gained admission by marrying women of Indian blood. In addition to all these, there are thousands more whose names appear upon the official rolls, but who are repudiated by the Indians themselves. In spite of frequent statements to the contrary, there can be no doubt that the Indian population has greatly decreased and is still on the decline, excepting in the case of a few tribes. The entire aboriginal population of the Atlantic seaboard, embracing formerly at least a hundred tribes, is represented now by about 2500 mixed-bloods, scattered in small communities from Maine to Florida. On the plains within living memory the Pawnees have dwindled from 10,000 to 600 souls, the Tonkawas from 500 to 50, the Confederated Mandan, Arikara, and Minitari from 6000 to 1000. On the Pacific coast the native population was practically wiped out of existence within a few years after the first irruption of the gold hunters. About 10,000 Indians, formerly belonging within the area of the United States, are now permanently domiciled in Canada or Mexico.

Appropriations.—Statistics carefully compiled by the treasury department show the total government expenditure on account of the Indian service, from March 4, 1789, to June 30, 1900, to have been \$368,358,217.17. Although not specifically stated, this includes all sums paid for lands purchased from the tribes. The appropriation for the fiscal year ending June 30, 1901, is \$8,873,239.24. Of this total, \$3,080,367 is for education, \$2,512,447.45 for fulfilling existing treaty obligations, \$646,500 for miscellaneous gratuities, \$676,000 for payment for Indian lands recently acquired, the rest for "current and contingent expenses," "incidental expenses and miscellaneous."

Education.—The figures given above by no means represent the full amount expended for Indian schools during the year, but only the amount specifically appropriated by Congress for that purpose. A large number of schools are supported from funds belonging to the Indians, as in the case of the Five Civilized Tribes of the Territory; some by State appropriation, particularly in New York; and many, including several of those longest established, by private missionary enterprise. The government scheme includes day schools and boarding schools, both on and off the reservations, together with special contract arrangements with mission and (white) public schools. The non-reservation boarding schools have been established with

the special purpose of familiarizing the Indian pupil with civilized surroundings, and with that idea in view are generally situated near cities or in populous industrial districts. They are recruited principally from the more advanced classes of the reservation schools, and give special attention to skilled industrial training, supplemented frequently by an outing system, under which the pupil becomes a member of a civilized household during a portion of the year, working upon the farm, in the house, or in the workshop, under responsible supervision, in return for a small compensation, which accumulates to his credit until his final graduation. It might be well if a plan could be formulated by which the Indian young men and women could be encouraged to marry before returning to their people, thus enabling the young couple to set up a civilized housekeeping at once upon the reservation, instead of, as now, leaving each returned pupil to make an unsupported struggle against the demoralizing influences of savage life. There should also be a provision for securing remunerative employment at their trades for such graduates as elect to remain in the East. Under existing conditions these young men, after leaving school, usually find the ordinary avenues to employment closed against them, and are compelled to accept ill-paid menial service until, in despair, they give up the fight and return to the reservation.

There are now 25 non-reservation Indian boarding schools supported by the government at various points throughout the country, the largest being Carlisle (Pennsylvania), with an enrolment of 1080; Haskell (Lawrence, Kan.), 700, and Phoenix (Arizona), 686. The total enrolment is 7430 pupils, with 620 employees. There are 81 government reservation boarding schools, with a total of about 9600 pupils, and 147 government reservation day schools, with an enrolment of 5090. By special contract a small number of pupils is being educated at white public schools, but the experiment seems not to be a success. In addition to this the contract and mission schools care for about 4000 more. Of this class, the largest is the Flathead Mission in Montana, with 300 pupils. No school statistics are at hand for the New York Indians, whose children are provided for by the State, or for the Five Civilized Tribes in the Indian Territory, who have hitherto managed their own educational affairs.

Rations and Annuities.—When the hunting tribes of the West consented to give up their free range and come upon reservations some thirty years ago, they were necessarily obliged to forego the buffalo chase, which constituted their sole means of subsistence. The government, consequently, by treaties, agreed to furnish them with rations for a term of years until, under the civilizing influences of the new régime, they should have learned to follow the white man's road. It must be understood that these rations are not a gratuity, but, together with the annuity goods, are in lieu of money compensation for the territory surrendered, equivalent to about one-third the present area of the United States. There are now about 45,000 Indians receiving regular rations from the government under these treaties, besides a considerable additional number of poor or aged who receive occasional assistance of this kind. The standard for 100 rations consists of 150 pounds beef, 50 pounds flour, 7 pounds sugar, 4 pounds coffee, 3 pounds beans. The yearly cost per capita of the full ration would be about \$51; but in accordance with the government policy for some years past, of throwing the Indian upon his own resources, the amount has been gradually reduced, and is now seldom or never issued, the average cost being less than \$30. "The ration system is the corollary of the reservation system. To confine a people upon reservations where the natural conditions are such that agriculture is more or less a failure and all other means of making a livelihood limited and uncertain, it follows inevitably that they must be fed wholly or in part from outside sources, or drop out of existence." It needs no argument, however, to show that the practice is demoralizing, encouraging idleness and perpetuating pauperism. Much careful thought has been given to the problem of its abolition, the most feasible plan seeming to be the gradual substitution of cattle instead of rations and annuities, with encouragement to the Indians to become stock-raisers, as the majority of the reservations upon the plains are unsuited to profitable farming. Akin to the ration system is that of per capita cash payments to the Indians, the money accruing from interest of invested tribal funds, from grazing or land leases, etc. Within the last fiscal year over \$1,500,000 was thus distributed to various reservation tribes, the amount per capita ranging from 50 cents to \$255. The general result of these payments is bad. "Not having to earn the money distributed, the Indians do not appreciate its value. It either goes to the traders on account of debts contracted in anticipation of the payment, or is squandered, often for purposes far remote from civilizing." The argument applies equally to the self-governing tribes in the Territory. The substitution of some better system is another of the problems engaging the attention of the friends of the Indian.

Reservations and Allotments.—In steady pursuance of a policy begun under the old colonial governments the original boundaries claimed by the various tribes have

been restricted by treaty purchases from time to time, in order to open up new lands to settlement by the rapidly increasing white population. Although strong pressure was usually brought to bear to induce the Indian to sell, the lands thus acquired were always paid for, excepting in a few special cases, the proceeds forming the basis of the present tribal funds invested with the government. As it became evident that the Indian, instead of being benefited, was rapidly becoming demoralized by contact with a rude and aggressive border population, a plan was formulated by President Monroe in 1823 for the removal of all the Eastern tribes to a tract in the unoccupied country west of the Mississippi, where it was vainly hoped that they might be forever secure from further molestation and free to work out their civilization under the fostering care of the government. For this purpose a tract was set apart west of the lines of Missouri and Arkansas under the designation of the "Indian Territory," and including Kansas, Oklahoma, and the Indian Territory as it now exists. By various treaties within the next twenty years nearly all the Eastern tribes were removed to the territory thus set apart for their use. Within a short time, however, the advancing wave of population again pressed upon the barriers, necessitating new treaties, by which Kansas was opened to settlement, and the resident tribes, both native and immigrant, were transferred to the southern country. In the meantime, it had been demonstrated that the plan of gathering tribes of widely differing habit and environment into a single restricted area was impracticable, and a new system was inaugurated by which the limits of each tribe were first defined by treaty, after which purchases were made as necessity demanded, leaving the unceded territory of each tribe as a "reservation" subject to future sales and curtailments as consent of the Indians could be obtained. In this way it has come about that most of the Indians formerly living east of the Mississippi are now concentrated in the Indian Territory, while the native Western tribes are upon reservations scattered over the entire Western country. The whole number of reservations under direct government control is now about 65, without including the lands of the Five Civilized Tribes in the Indian Territory and several small State reservations in the Atlantic States. In every case the reservation lands are held in common.

By frequent cessions most of these reservations have been much reduced from their original size, and since the passage of the General Allotment act of 1887 it has become the settled policy of the government to abolish the reservation system altogether. Under this act commissions have been appointed to negotiate agreements with the various tribes, by which each Indian receives an allotment, usually of 160 acres, to be selected by himself, after which the remaining lands of the reservation are sold to the government at a price fixed in the agreement, the money being paid directly to the Indians per capita or invested with the government for their benefit. The lands thus acquired are then thrown open to white settlement, and the Indians themselves become full-fledged American citizens with right to vote and hold office, but without the power to alienate their allotted lands until the end of a term of years, after which it is presumed that they will be able to act wisely for themselves. Within the past ten years nearly the whole of Oklahoma has been thrown open under the provisions of this act, while a number of reservations in other parts of the West have also been abolished or curtailed. Should this policy continue, as is altogether probable, it is only a question of a few years when reservations will have disappeared and the entire Indian population will have been absorbed in the body of American citizens. What will be the effect upon the Indian himself is still a question for the future.

Leases.—For a number of years many tribes have been in the habit of leasing their surplus grazing lands to cattlemen, thereby deriving a very considerable income. It has also been customary to allow a limited number of white farmers to occupy Indian lands on condition of paying the Indians a certain sum for the privilege. Mining and other reservation privileges have also been thus leased by agreement with the Indians. Unfortunately, the Allotment act left a loophole by which the allotted Indian might under certain conditions lease out his holding. This provision, intended only for special cases, has been broadened until in some of the allotted tribes practically all the lands owned by the Indians in severalty are occupied and worked by white men at merely nominal rental, thus defeating the very purpose of the act, which was intended to encourage the Indian to self-support by giving him a secure title to an individual homestead of his own. To remedy this state of affairs more stringent conditions are now attached to all such leases, chief among which is the requirement that the renter shall make substantial improvements upon the lands in the way of fences, barns, etc., to become the property of the Indian owner at the expiration of the lease.

Irrigation.—On many reservations in the extreme West the water supply is a most important consideration. In the arid Southwest the agricultural tribes have depended for centuries upon a native system of irrigating dams and ditches, by which the waters of the Rio Grande, the Gila, and other streams were conserved for their use.

With the increase of white population these waters have in several instances been diverted to other purposes, so that the Indian fields are left dry and barren, with disastrous result to the native proprietors, who were forced either to starve at home or to abandon their reservations and become wanderers. In the case of the Pima in Arizona the distress became so acute during the last year that it was seriously proposed to deport the whole tribe to California, where they had been accorded a tentative offer of employment in the fruit orchards. The situation has now been met by special appropriations for irrigation construction at Pima, San Carlos, and Colorado River reservations in Arizona and at several others within the arid belt.

The Five Civilized Tribes.—Under the treaties by which the "Five Civilized Tribes"—namely, the Cherokee, Creek, Choctaw, Chickasaw, and Seminole—were removed from the Southern States to their present homes in the Indian Territory some sixty-five years ago they were guaranteed each their tribal autonomy under official recognition as protected nations, practically on a par with the several State governments. The Cherokee, in fact, on the suggestion of President Jefferson himself, had adopted all the machinery of a national government, with printed constitution and representative houses of legislature, as far back as 1827. The governments of the other four tribes are modelled upon the same general plan, each nation having its own governor, senate, and legislature, elected by popular vote, its national courts, school system, and treasury. While such a status was possible and appropriate half a century ago, conditions are now so radically different that a speedy change is inevitable. More than 200,000 white people are now permanent residents of the Indian Territory, and will not be displaced, while the Indian population of the Five Tribes numbers barely one-fourth as many, including mixed-bloods. To meet this emergency various enactments have been passed by Congress within the past few years, all having for their ultimate purpose the extension of complete federal jurisdiction over the Territory, the extinction of the Indian governments, and the opening of the country to unrestricted white settlement. The most recent and sweeping of these enactments is the Curtis bill of 1898 "for the protection of the people of the Indian Territory," by which all control of tribal funds is taken from the Indian governments and lodged with United States officers, and authority is given to the white residents to incorporate towns within the Indian nations. In the meantime, despite the protest of the Indians, a complete survey of the Territory is being prosecuted with a view to allotment, town sites are being located and platted, federal courts are exercising jurisdiction, federal supervisors are in charge of the Indian schools, and federal commissions are determining claims to Indian citizenship. By persistent effort since 1893 the commission to the Five Civilized Tribes, commonly known from its distinguished chairman as the "Dawes Commission," has finally secured with each of the Five Tribes tentative agreements looking toward allotment and citizenship; but in each tribe, particularly among the Creeks and Choctaws, there is a determined conservative opposition, which may yet cause serious trouble.

Miscellaneous.—The recent timber troubles upon the Chippewa reservations in Minnesota have resulted in a department order suspending all further timber sales upon those reservations. The homeless Seminoles in southern Florida have been provided for by the purchase of 23,000 acres, to be set apart as a reservation for their benefit. The long-pending agreement with the Kiowa, Comanche, and Apache Indians of Oklahoma was finally ratified by Congress on June 6, 1900, with an additional provision reserving to the Indians a common pasture of 500,000 acres. The Indian allotments are to be selected within six months from the date of ratification, after which steps will be taken for throwing the reservation open to settlement. Other features of interest within the year are the reorganization of the Chickahominy tribe in Virginia, with William H. Adkins as chief, and the erection of a monument in South Carolina to the memory of the Catawba Indians who served in the Confederate army.

INDIAN TERRITORY, an unorganized Territory of the United States, set apart by Congress in 1834 for Indian reservations, has an area of 31,000 square miles.

Mining.—In spite of strikes, which occurred in 19 of the 29 mines in the Territory, and gave enforced idleness to 1825 men for an average of 154 days, the coal production in 1899, the latest year for which reports are available, increased 155,961 short tons, or about 10 per cent., over that of 1898. The total product was 1,537,427 short tons; spot value, \$2,199,785. The strikes were caused by the demand of the miners' union that it be recognized as such, and by the refusal of the operators to comply with the demand. The total time lost by the strikes was equal to about one-third of the actual working time made by the 4084 men employed in the mines. Of the total coal product in 1899, 26,862 short tons were made into coke, about 1.55 tons of coal being used to make one ton of coke.

Railroads.—The construction of railroads reported for 1900 aggregated 158.26

miles, making the total mileage in the Territory 1500.85, the chief corporations out of some twenty railroad companies now being the Missouri, Kansas & Texas, the St. Louis & San Francisco, the Choctaw, Oklahoma & Gulf railroads, and the Santa Fé and the Rock Island systems, with which five corporations most of the other railroads are allied. The first-mentioned road, with 300 miles of main lines and two-thirds as much in branch lines, was the first to gain advantage of the government's offer to grant the use of land for track, station, and other railway purposes at a nominal annual payment to the Indian nations. With the entrance of other railroads into the Territory contention has arisen over claims of vested rights, owing to the provision, added to the right-of-way granted to the Missouri, Kansas & Texas Railroad, that if the Indian tribes should ever cease to exist, or from any other cause should cease to occupy their Territory, and the latter should become a part of the public domain, in that event this road should be entitled to alternate sections ten miles wide on each side of its main track the entire length of the Territory. Owing to the fact that the allotment system now being carried out will make it impossible for the Indian Territory ever to become public domain, the railroad in question is accusing the government of bad faith in the matter, and proposes, it is said, to sue in equity for its claim.

Banks.—On October 31, 1900, there were 33 national banks in operation and 1 in liquidation. The capital stock aggregated \$1,400,630; circulation, \$482,970; deposits, \$2,275,944; and reserve, \$717,922. Six private banks, June 30, 1900, had capital, \$55,000; deposits, \$161,560; and resources, \$244,360.

Education.—The total school population of the Territory is probably about 60,000, of which three-fourths are whites. In 1899 there were 4 public high schools, with 11 teachers and 70 students; 10 private secondary schools, all denominational, with 24 teachers and 433 students; and 2 so-called colleges, denominational, with 23 professors and instructors and 285 students.

The Five Civilized Tribes occupy all of Indian Territory except a very small portion, having been removed thence from the Southern and Gulf States upon the influx of immigration to those regions from the Atlantic States. Among these tribes the religious bodies of the country established boarding schools at an early date, and these were supplemented later by schools organized by the nations themselves at the instance of and for a time under the direction of the missionary. In time the Indians themselves took over the management of their schools, since which period there has been no material advancement, while in many cases there has been gross mismanagement. By recent acts the government, through the Department of the Interior, has assumed charge and control over the schools of the Choctaws, Chickasaws, Creeks, and Cherokees; by an agreement made in 1899 between the Seminoles and the Dawes Commission, representing the United States, it appears that the government has no direct control over the schools of that nation so long as tribal government shall exist. In 1899 there were 365 Indian neighborhood schools among the Five nations, 26 boarding and industrial schools, and a number of higher schools, the whole involving an Indian expenditure of nearly \$560,000. The commission of Indian affairs reports that the only hope of permanent and lasting results in the work of training the Indian for civilization and citizenship lies in the complete government control of the entire educative machinery of the tribes. In addition there is a great number of whites in the Territory who are desirous of educational advantages for their children. Provision for such has been made in the Curtis law, by which towns may maintain free schools under certain conditions outlined in Mansfield's *Digest of the Statutes of Arkansas*. It is reported that Paul's Valley, in the Chickasaw nation, and Muscogee, in the Creek nation, were the first to organize, the first-named raising 1 per cent. on a personality of \$355,000, the second spent \$5000 on building. In 1900, 12,000 town children were reported enrolled, with an attendance of 7206, and a corps of 122 teachers.

Population.—According to the United States census, the population in 1890 was 180,182, and in 1900, 391,960, an increase for the decade of 211,778 persons, or 117.5 per cent. The above totals represent the entire population of the Territory, including Indians, some 16,000 negroes who were once in slavery to them or are the descendants of former slaves, and 100,000 whites, including men with permits to reside in the Territory, employees of the Indians, railroad men, miners, and cattle-men who have leased land from the Indians and others. There are five nations and seven reservations in Indian Territory. The largest town is Ardmore, with a population in 1900 of 5681.

Statehood.—A convention, composed of delegates from Oklahoma and Indian Territory, favoring joint statehood for the two Territories, was held late in the year. The conditions prevailing at that time in the unorganized Indian Territory were described as simply intolerable. For although industries and the white population had increased enormously, the Territory was still under the authority of Indian inspectors and agents, and unable to make for itself the most necessary laws. In

summing up the situation, a prominent independent paper credited the temporary chairman of the convention with stating that "there were (in the Territory) more than fifty thousand children of school age, and no schools; cities, towns, and villages, and little or no law for the protection of the population thereof; mills, factories and mines, and no roads to reach them; rivers to cross, and no bridges; deaf, dumb, blind, and insane, and no asylums. Their cities, he continued, might be ravaged with fire, and there was no law that allowed them to protect themselves. Contagion might rage . . . and the laws were inadequate to offer any protection. The insane, he added, were chained . . . like wild beasts in cages; the boys and girls were being educated in crime, and discharged inmates from the penitentiaries of the bordering States found an asylum in the Indian Territory." Assuming that this description is a considerable exaggeration of actual facts, it would still seem that remedial legislation by Congress is urgently needed.

Dawes Commission.—The work of this commission has been extended in the past two or three years by the enactment of the Curtis act. The work already accomplished and yet to be performed has been summarized by a recent writer on the Territory as follows: (1) The partial, yet to be final, abolition of the Indian tribes and local governments; (2) the segregation of their lands by survey, etc.; (3) the enrolment of all Indians and freed persons, and the passing upon the claims made; (4) the survey and allotment to individuals of nearly 20,000,000 acres of land; (5) the making of conditions which insure peace, recognize the "intruder," and establish law and order; (6) the creation of municipal government as the beginning of civil institutions; (7) the founding of a system of public schools; (8) the prevention of Indian pauperism during a reasonable period of change; and the protection of annuity and other funds and of such property as coal lands, etc., as shall remain of joint interest, and its disposition for the benefit of all concerned. It was at first expected that the work of allotment, etc., under the Curtis act would be closed by January 1, 1901, but the time has been extended somewhat. It has been intimated that of the 19,998,036 acres in the Territory, a total homestead acreage of 9,337,560 will be apportioned to enrolled Indian citizens, and 488,280 acres to their colored affiliates. A student of Indian affairs points out what he considers a danger in the tendency of the Indians to rent their lands to farm cultivators, because of the possibility of gaining a small income at the cost of no labor; by bringing about a race of shiftless land-owners with farms cultivated chiefly by white tenants. It is the policy of the Interior Department, however, to encourage this process as a long step toward allotments and tribal segregation. See further the article INDIANS OF THE UNITED STATES, especially the paragraph The Five Civilized Tribes.

INDO-CHINA, FRENCH, comprises the territory acquired by France in Farther India, or the Indo-Chinese Peninsula. Figures for the area and population of the component parts of French Indo-China have varied, but recent and apparently the most trustworthy estimates are as follows: Anam, 88,780 square miles, population, 5,000,000; Cambodia, 40,530 square miles, population, 1,500,000; Cochin China, 23,160 square miles, population, 2,400,000; Laos, 91,000 square miles, population, 1,500,000; Tonquin, 119,660 square miles, population, 12,000,000; total, 363,130 square miles, population, 21,400,000. On the east Indo-China touches the Gulf of Tonquin and the China Sea, and on the south, the China Sea and the Gulf of Siam. The northern boundary, separating the country from China, is an irregular line running in a generally westerly direction from the head of the Gulf of Tonquin to the Mekong River; this river forms the western boundary with British Burma and with the Kingdom of Siam to the rapids near Stungtreng, whence the frontier diverges in a southwesterly direction to the Gulf of Siam. Indo-China is administered by a civil governor-general, M. Paul Doumer, since 1896, who is stationed at Hanoi in Tonquin; he is assisted by a lieutenant-governor for Cochin China, and official residents for Tonquin, Anam, Laos, and Cambodia, while a superior council, of which the governor-general is a member, decides upon the budgets for Cochin China and Laos and advises regarding those of Tonquin, Anam, and Cambodia. In addition to about 12,000 native troops, there is a French army of occupation numbering about 8000 men. The chief sources of revenue are customs, government monopolies, posts, telegraphs, and railways, while expenditures are principally for public works and administrative, military, and judicial services. The expenditure of France on Indo-China, according to the budget of 1900, was 19,222,000 francs.

The country produces rice, pepper, raw hides, resins, cacao, copra, volatile oils, cotton, sugar, tobacco, seeds, and spices; coal is mined on the coasts of Anam and Tonking, and several other minerals, including gold, silver, copper, lead and tin, are said to occur. By far the most important export is rice, which in 1898 amounted to about 98,414,000 francs; other exports include fish (7,570,000 francs in 1898), pepper, spices, and animal products. The principal imports are various textiles, metal goods, mineral substances, and wines and other beverages. In 1898 the total

exports, excluding re-exports and including coin valued at 4,636,794 francs, amounted to 125,553,528 francs, the produce sent to France amounting to 29,198,786 francs. The total imports for the same year were valued at 102,444,346 francs, of which France (including her colonies) was credited with 44,415,986 francs. This shows an increase over the imports in 1886 of only about 19 per cent., but the increase in the value of the imports from France (and colonies) during this period was about 186 per cent. Distribution in 1898 was as follows, figures for the French imports standing first and for those from other countries second: To Cochinchina and Cambodia, 23,481,000 and 31,482,000 francs; to Tonking, 20,413,000 and 23,248,000 francs; to Anam, 474,000 and 3,298,000 francs. The imports other than French come chiefly through Hong Kong, Singapore ranking second. In 1899 the exports and imports were reported to amount to 128,500,000 francs and 111,250,000 francs respectively. In addition there is a land trade with the Chinese province of Yunnan amounting to upward of 12,000,000 francs annually.

Communications have recently been improved by work on roads and canals. There are in the country only about 119 miles of railway open for traffic—the Phulong-Thuong-Langson line, 64 miles, in Tonquin; a line from Saigon to Mytho, 51 miles, in Cochinchina; and 4 miles on an island in the Mekong at the entrance to the Laos country. Extensive railway construction has been projected by the French. The following lines were reported to be under construction in 1900, between Hanoi and the Chinese frontier; Hanoi and Ninh Dinh; Hanoi and Haiphong. Other lines reported to be commenced soon are: Saigon to Khanhhoa; Ninh Dinh to Vinh; and Tourane to Hué. A line has also been projected between the Red River and the Chinese city of Yunnan.

In 1899 France acquired the small territory of Kwang Chi Wan in the southern part of the Chinese province of Kwangtung on the China Sea. This and the islands ceded with it were placed in 1900 under the authority of the governor-general of Indo-China.

See ANAM; CAMBODIA; COCHIN CHINA; LAOS; TONQUIN; and SIAM.

INDUSTRIAL CHEMISTRY. See CHEMISTRY.

INDUSTRIAL COMMISSION. On June 18, 1898, Congress passed an act authorizing "the appointment of a non-partisan commission to collate information and to consider and recommend legislation to meet the problems presented by labor, agriculture, and capital." The commission was to be made up of five members of the Senate, five members of the House of Representatives, and nine other persons appointed by the President. Section II. of the act provided "that it shall be the duty of this commission to investigate questions pertaining to immigration, to labor, to agriculture, to manufacturing and to business, and to report to Congress and to suggest such legislation as it may deem best upon these subjects." The commission was further required to "furnish such information and suggest such laws as may be made a basis for uniform legislation by the various States of the Union, in order to harmonize conflicting interests and to be equitable to the laborer, the employer, the producer, and the consumer." Soon after the passage of the act the commission was organized as prescribed, and proceeded to carry out the instructions of Congress. The field outlined by the law was so broad that it soon became clear to the members of the commission that it would be necessary for it to divide itself into a number of subcommissions for the study of the various questions, and to engage expert aid in studying the intricate problems before them. Although the term of the commission was fixed originally for two years, it proved impossible for it to cover the entire field within that period of time and to present an adequate report, not to speak of elaborate bills for enactment by Congress, and its time has been extended until December, 1901. The time so far spent by the commission has been occupied with the taking of testimony, with the assistance and advice of its expert agents, and not until the spring of 1900 did any of its so-called preliminary reports appear. The reports so far issued cover the subjects of trusts, prison labor, transportation, and labor legislation. The testimony taken on the trust problem covers a bulky volume of more than 1300 pages. It is accompanied by a review of the evidence and a compilation of the statutes and decisions of federal, State and Territorial laws relating to corporations and large industrial combinations, prepared by Professor J. W. Jenks, of Cornell University. The committee are united in making the following preliminary recommendations as a means of destroying the power of the trusts for evil and of preserving their power for good. To prevent the organizers of corporations or industrial combinations from deceiving investors and the public either through suppression of material facts or by making misleading statements, the commission recommends:

Promoters of corporations or industrial combinations which invite public subscriptions to be obliged to furnish under penalty of law information as to the amount of stock to be issued and the kind and amount of value—services, plants, good will, etc.

—for which the stock is given. The business of the corporation and the powers granted to its directors or officers to be stated in the certificate of incorporation. Corporations to be required to publish annually a report, properly audited, showing the assets, liabilities, profit and loss of the business, and stockholders to be permitted, under proper restrictions, to have access to records or directors' meetings.

To prevent *railroad discrimination* the committee recommends: The Interstate Commission to be given authority to prescribe the method of keeping railroad accounts and to inspect and audit the same. The Interstate Commerce law to be amended so as to make the decisions of the commission operative before and until reversed by the courts. The commission to be authorized to prescribe classifications of freight articles and to make regulations for freight transportation throughout the United States. For a discussion of recent trust formations and their mode of operation, see article TRUSTS.

The competition of *prison labor* with that ordinarily employed in business has wrought such hardships upon the wage workers, as well as upon the capitalists, whose investments in certain industries have sometimes been ruined by the competition of cheap prison labor, that several States have passed laws to remedy that evil. As the latter has by no means been done away with entirely, and is still a subject of lively agitation in those industries and parts of the country where it is chiefly felt, the Industrial Commission has naturally given some attention to it. With the assistance of Messrs. William M. Steuart and Victor H. Olmsted, of the Department of Labor, it has collected and codified information as to the laws and practices of the various States in connection with the convict labor problem, and embodied the information, together with its recommendations, in a special report submitted to Congress April 25, 1900. In the opinion of the commission "the nearest to a complete remedy for the evils of convict labor competition with the business and labor of the country would be the interdiction of interstate commerce in all goods, minerals, or materials in whole or in part the product of convict labor, supplemented by States legislation on the lines above indicated." (See article CRIME.) "But in the absence of such legislation by all the States, and in order to protect such States as do adopt such legislation from the convict labor competition of others, the most practical step would be an act of Congress by which goods, minerals, or materials in whole or in part the product of convict labor, upon their arrival in any State, would become fully subject to its laws. . . . The commission is of opinion that it is both constitutional and possible to enact such a law, and that a simple statute which shall merely remove the federal control of interstate trade in convict-made goods, so that they become subject, wherever found, to the general regulation of the State laws, would meet the case."

In submitting its report on *transportation*, the commission declared it would not be prepared to make recommendations to Congress until it had gone somewhat more fully into the subject. But accompanying the seven hundred and odd pages of testimony so far taken there is a review of the evidence by the commission which indicates pretty clearly the view which the commission is inclined to take. The topics reviewed are very numerous. On the subject of freight discrimination the commission says that "there is a general consensus of opinion among practically all witnesses, including members of the Interstate Commerce Commission, representatives of shippers and railway officers, that the railways still make discriminations between individuals, and perhaps to as great an extent as ever before." The other topics dwelt on are the elevator monopoly and its effect on grain prices; the discrimination in freight in favor of exporters and between places; the question of pooling and the possibility of its control by the Interstate Commerce Commission; passenger rates; the capitalization of railways; consolidation of railways; the proposed increase of powers of the Interstate Commerce Commission, as well as other proposed legislation; government ownership and government control; the relations of railways and their employees, affecting the methods of engaging railway labor, conditions as to union membership, discharge and suspension and blacklisting; the wages and hours of labor; the use of injunctions in strikes; the liability of railways for accidents to employees; the use of safety appliances, and accidents, etc.

Some of the more important recommendations of the commission upon these subjects are as follows: As to *hours of labor*, the commission recommends that a statute be enacted by all the States prohibiting the employment in factories of children under 14, and further protecting child labor by providing that no child may be employed in either factories, shops, or in large department stores who cannot read and write, and except during vacation; that eight hours be fixed as the working day in all public employments and also in all underground mines or workings; that a State law be adopted providing that laborers shall be paid in cash and without discount. As to *injunctions* the commission thinks that the practice of issuing blanket injunctions against unnamed defendants, as well as the practice of indirectly enforcing a contract for personal service by enjoining employees from quitting work.

should be proscribed. As to *intimidation*, the commission recommends a national law prohibiting employers from coercing employees in the matter of suffrage, or from seeking to influence them. On the subject of *railway labor* the commission believes that Congress should adopt a code regulating hours of labor, the limitation of continuous runs by engineers or continuous service by telegraph operators, and that Congress should draw up a code defining the liability of the railroad for damages and accidents to employees. As to *union labor*, the committee considers that present State statutes discriminating between union and non-union men constitute class legislation, and are therefore unconstitutional; that every facility should be given to labor to organize, and that every case of the notion that trade unions are a criminal conspiracy should be swept away. As to *arbitration*, the commission believes that compulsory arbitration rarely works well, and should not be prescribed, but that a federal statute should be enacted making the resort to arbitration compulsory before a strike is initiated, with the proviso, however, that the decision of the arbitrators is not to be binding upon either party. The commission thinks that when once the facts are clearly brought out by the arbitrators the occasion for the strike will in most cases have been done away with.

INGALLS, JOHN JAMES, a prominent member of the United States Senate for eighteen years, died August 16, 1900. He was born at Middleton, Mass., in 1833, graduated at Williams College in 1855, and after studying law removed to Atchison, Kan., where he resided until his death. In 1859 he was a delegate to the Wyandotte Convention, which framed the first State constitution of Kansas, and in 1862 was a member of the State Senate. This same year and again four years later he was a Republican candidate for lieutenant-governor, but failed of election. Meanwhile, as editor of the *Atchison Champion*, he was taking a prominent place in journalism. In 1873 he began his long membership of the United States Senate. He enjoyed a reputation as a brilliant speaker and formidable debater, and became noted for his merciless use of personalities. A notice that he was to speak brought large crowds to the Senate chamber. He was also well versed in parliamentary law, and during his last four years in the Senate as president *pro tempore* made an excellent presiding officer. At the time of the rise of Populism, in 1890, Mr. Ingalls tried to secure the support of the Populist party by advocating some of their principles in a speech in the Senate. His position estranged many of his supporters in Kansas, and at the same time could not win the Farmers' Alliance. In 1894 and again two years later Senator Ingalls tried unsuccessfully for re-election to the Senate.

INORGANIC CHEMISTRY. See CHEMISTRY.

INSANITY. Reports for 1899, published in 1900, give 15,663 as the total number of insane persons in Scotland, an increase for the year of 264. In Ireland the number of insane in the various hospitals January 1, 1900, was stated at 20,863, as compared with 20,304 on January 1, 1899. There was an increase in district asylums and a decrease in private asylums and workhouses. The commissioners in lunacy for the British Isles for 1899 report 106,611 lunatics in England and Wales, 58,075 being females and 48,536 males. Dr. R. Percy Smith, at a meeting of the British Medical Association in September, 1900, stated that the number of insane in England and Wales in 1899 had increased 3114 over the number in 1898, the figures indicating an absolute increase and also an increase in the ratio of the insane to the general population. The latter ratio had risen from 1 to 337 in 1897 to 1 to 306 in 1899. While no single factor could be assigned for the increased prevalence of insanity, Dr. Smith considered as the most potent influence the modern life, with its ceaseless activity, strains, competitions, overwork, and struggle. Heredity remains the great etiological factor, and abstinence from marriage and the perpetuation of a neurotic family alone can limit the influence of heredity. Next in importance come alcohol and syphilis in the causation of lunacy.

Much has been made in newspapers of the reports of an alarming proportion of insane men among the United States troops in the tropics. On this topic the *Army and Navy Register* prints the following remarks: "It is true there are many cases reported by surgeons in the Philippines as insane, and the men thus supposedly affected are sent home on transports, but it has been found that in a majority of these cases the disability is removed by the time the patient reaches San Francisco, and the soldier is thereupon continued in the service and sent to one of the home battalions. The surgeons attribute the alleged cases of insanity to severe mental depression—a debility of the nervous system due to acute attacks of homesickness. The report for the calendar year 1899 shows that there were 188 cases of insanity among 105,546 men, of which 58 cases occurred among 42,192 men in the United States, 84 cases among 39,280 in the Pacific Islands, 14 cases among 3727 men in Porto Rico, and 32 cases among 29,051 men in Cuba. Of course, the small force

in Porto Rico does not justify conclusions; but taking the 188 cases from the army at large, it will probably be disclosed in General Sternberg's report that hardly half of these cases were those of actual insanity. The results will probably show that the percentage of insanity as a disability among the troops is not much higher now than in previous years. There has been a great deal of interest in the subject, and one of the most important passages in General Sternberg's report will be that which deals with insanity in its relation to the foreign service now demanded of the army." From the surgeon-general's report we learn that the tropical service in Porto Rico caused 3.76 cases of insanity per 1000, while in the United States the rate was 1.37. For the whole army the rate for 10 years prior to 1898 was 1.7; in 1898 it rose to 1.8, and in 1899 to 1.78. On the other hand, it is claimed that cases of mild mental failure in the older men have been startlingly numerous, and that these cases do not appear in the reports. It is also claimed that many cases of mild melancholia, occurring among the younger men, and from which they recovered on the journey home, have been denied by the sufferers themselves, and not reported. The actual truth lies probably between the two extremes of these claims and the information furnished by the statistics. The neurotic and the aged suffer most from cerebral exhaustion, caused by the climate, disease, and the hardships of the campaign. At the first sign of exhaustion troops should be returned home; but it is an extremely difficult matter for a surgeon to determine where homesickness ends and mental failure begins. The various types of insanity found in the United States and their present frequency can best be learned from an examination of a year's statistics of a large institution, where accuracy in examination and careful record of histories is a part of the routine work. Dr. Charles W. Pilgrim has published in the *American Journal of Insanity* for July, 1900, a study of a year's statistics of the Hudson River State Hospital for the Insane, at Poughkeepsie, N. Y., of which he is the superintendent. The facts and figures hereafter given are taken from his article. Of 522 cases admitted during the year, 41.5 per cent. presented symptoms of melancholia, 32.5 per cent. symptoms of mania, 20 per cent. were cases of dementia, and 6 per cent. were general paretics. Tuke, of London, gives the usual proportion as 49.1 per cent. of mania to 24.9 per cent. of melancholia; and Clouston, of Edinburgh, gives 55 per cent. of mania to 36 per cent. of melancholia as the result of his experience. Pilgrim finds in a total of the patients in all the hospitals for the insane in New York State 40 per cent. of melancholia to 29 per cent. of mania. Of the 522 cases, 66 recovered during the year, 19 were discharged as improved, and 2 as not insane, and 60 died. Of the remaining, 87 will probably recover, and 44 will probably improve—that is, about 30 per cent. of the number will recover, 12 per cent. improve, 11 per cent. die, and about 47 per cent. were chronic when admitted. About 20 per cent. became insane from worry, mental strain, religious excitement, etc., these causes being operative twice as frequently among women as among men. Excessive use of alcohol was the cause of the insanity in 75 cases, nearly all men; drug habit in 21 cases, nearly all women, and 33, nearly all men, owed their insanity to immorality of some kind. About 33 per cent. of the number became insane from physical causes, such as disease of organs, injuries, and physiological crises. In 14 cases congenital defect was the cause, in 48 heredity was the sole cause stated, and in 122 others an inherited predisposition existed. About 25 per cent., therefore, would have escaped mental trouble were it not for inherited nervous instability or lack of self-control, and about 33.3 per cent. started in life heavily handicapped by inheritance of an insane diathesis. Of those who recovered, 41 were under 30, 59 were between 30 and 50, and 21 were over 50 years of age. Recovery is, therefore, five times as probable if the patient is under 50. Of those admitted, 15 were under 20, 159 were over 50, and 348, or 67 per cent., were between the ages of 20 and 50. These figures emphasize the fact that insanity is a disease of the active period of life.

INSECTS AND DISEASE. See ENTOMOLOGY.

INSTITUTE OF ELECTRICAL ENGINEERS. See AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS.

INSTITUTE OF FRANCE, organized 1795 as the successor of four old French academies; reorganized 1816. It now comprises (1) the Académie Française (*q.v.*); (2) the Académie des Inscriptions et Belles-Lettres, for the study of archaeological and antiquarian questions, 40 members; (3) the Académie des Sciences, including under mathematical sciences sections in geometry, mechanics, astronomy, geography, naval architecture, and general physics; and under the physical sciences sections in chemistry, mineralogy, botany, agriculture, anatomy, zoology, medicine, surgery, etc., and having the gift of many prizes, 66 members; (4) the Académie des Beaux Arts, which has divisions of painting, sculpture, architecture, engraving, and music, and which comprises in its membership 14 painters, 8 sculptors, 8 architects, 6 musicians,

and 4 engravers; (5) the Académie des Sciences Morales et Politiques, revived 1832, having sections in philosophy, ethics, political economy, law, politics, administration, finance, etc., 40 members. Members of the institute are elected for life, and receive an annual stipend.

INTERNATIONAL CONFERENCE ON THE PRESERVATION OF BIG GAME. See BIOLOGY (paragraph Mammals).

INTERNATIONAL CONGRESSES AT PARIS EXPOSITION. See PARIS EXPOSITION.

INTERNATIONAL CONGRESS OF ELECTRICIANS. See PHYSICS.

INTERNATIONAL CONGRESS OF PHYSICISTS. See PHYSICS.

INTERNATIONAL FISHERIES CONGRESS. See FISH AND FISHERIES.

INTERNATIONAL PSYCHICAL INSTITUTE. See PSYCHICAL INSTITUTE, INTERNATIONAL.

INTERNATIONAL SPORTS. See SPORTS, INTERNATIONAL.

INTERNATIONAL YACHT RACES. See YACHTING.

IOWA, a Western State of the United States, has an area of 56,025 square miles. The capital is Des Moines. Iowa was organized as a Territory July 3, 1838, admitted as a State March 3, 1845, and readmitted with enlarged boundaries December 28, 1846. According to the United States census, the population in 1890 was 1,911,896; in 1900, 2,231,853; increase for the decade, 319,957, or 16.7 per cent. The four largest cities, with population in 1900, are: Des Moines, 62,139; Dubuque, 36,297; Davenport, 35,254, and Sioux City, 33,111.

Agriculture.—The following shows the production and value of the principal crops for 1900: Corn, 305,859,948 bushels, \$82,582,186; wheat, 21,798,223 bushels, \$12,860,952; oats, 130,572,138 bushels, \$26,114,428; barley, 11,708,822 bushels, \$4,332,204; rye, 1,806,570 bushels, \$740,694; buckwheat, 148,800 bushels, \$95,232; potatoes, 14,004,576 bushels, \$5,181,093, and hay, 5,006,470 tons, \$34,043,996. Iowa led all the States as a producer of corn and hay, and took second rank in the production of oats and barley. The *Bulletin* of the National Association of Wool Manufacturers estimated the wool product for 1900 as follows: Number of sheep, 586,644; wool, washed and unwashed, 3,813,186 pounds; scoured wool, 1,715,934 pounds.

Industries.—During the fiscal year ending June 30, 1900, the amount of spirits rectified was 76,249 gallons; distilled spirits gauged, 143,459 gallons, and fermented liquors produced, 245,603 barrels. The total number of cigar factories in operation during the calendar year 1899 was 657, and tobacco factories, 89. Their combined output was 81,194,693 cigars, 52,300 cigarettes, and 431,871 pounds of tobacco. The total amount of coal mined in 1899 was 5,177,479 short tons, valued at \$6,397,338, the largest annual production in the history of the State. The average price of coal per ton, \$1.24, was the highest recorded in five years. Strikes of comparatively short duration occurred in 34 of the 230 active mines reporting. The average working time lost by each man on strike was 28 days; and although a total of 2623 men were made idle, the total working time lost was 72,710 days—less than 3 per cent. of the actual working time made by the 10,971 men employed in the mines. The principal quarry products in 1899 were sandstone and limestone, with a total valuation of \$809,924. In the same year Iowa ranked fourth among the States as a packer of sweet corn, the output being 846,300 cases of 24 cans each.

Commerce.—During the fiscal year ending June 30, 1900, the imports of merchandise at the principal delivery ports were valued as follows: Burlington, \$185; Council Bluffs, \$15,804; Des Moines, \$45,696; Dubuque, \$40,904, and Sioux City, \$27,910; total, \$130,499, a decrease in a year of \$2082; exports, none.

Railways.—In 1900 Iowa ranked third among the States in new railway construction, with new mileage for the calendar year of 267.76. Total railway mileage in the State, 9405.84.

Banks.—On October 31, 1900, there were 203 national banks in operation and 78 in liquidation. The capital stock was \$14,202,820; circulation, \$7,922,604; deposits, \$61,536,387, and reserve, \$10,581,450. The State banks June 30, 1900, numbered 214, and had capital, \$9,309,800; deposits, \$32,938,940, and resources, \$45,118,208; private banks, 119, with capital, \$2,807,042; deposits, \$9,372,661, and resources, \$13,843,345; and stock savings banks, 226, with capital, \$8,745,100; depositors, 160,773 (estimated); deposits, \$58,208,115, and resources, \$69,274,126. Exchanges at the clearing houses at Davenport, Des Moines, and Sioux City for the year ending September 30, 1900, aggregated \$177,297,559, an increase of \$17,703,367 in a year.

Education.—The following table, compiled from the *State Educational Directory*, issued by the Department of Public Instruction in November, 1900, gives comparative statistics of the public schools for 1899 and 1900:

Items.	1899.	1900.
Number of schoolhouses.....	13,836	13,861
Value of ".....	\$16,908,076	\$17,655,992
Schoolhouses built during the year.....	272	240
Population between ages of 5 and 21.....	727,775	731,154
Number enrolled in school.....	554,992	566,223
Average daily attendance.....	364,409	373,474
Average monthly tuition per pupil.....	\$1.86	\$1.96
Number of teachers employed.....	28,437	28,789
Amount paid for teachers' salaries.....	\$5,417,663	\$5,606,932
" " " all other school purposes.....	\$3,165,754	\$3,421,986
Total school expenditures.....	\$8,583,417	\$9,028,918

In 1900 the State University reported 102 professors and assistants, and 1438 students in all departments. In 1899 there were 330 public high schools, with 1006 teachers and 27,399 students; 35 private secondary schools, with 143 teachers and 1898 students; 5 public normal schools, with 62 teachers and 2097 students, and 18 private normal schools, with 108 teachers and 2567 students. Twenty-five colleges and universities for men and for both sexes reported 364 professors and instructors, 5667 students, and a total income of \$406,835; and 1 school of technology reported 67 professors and instructors, 744 students, and a total income of \$119,647. The professional schools comprised 5 theological schools, with 18 instructors and 216 students; 2 law schools, with 13 instructors and 363 students, and 5 medical schools, with 93 instructors and 626 students.

Finances.—The assessed valuation of taxable property for the year 1900 was as follows: Personal property, \$98,903,739; realty, \$393,268,387; railroad, sleeping-car, express company, telegraph and telephone property, \$47,501,138; total, \$539,268,387. Property is assessed at one-fourth its actual value. The total State tax levy in 1900 was 2.7 mills. The State debt amounts to \$10,937,18, which, according to the constitution, cannot be paid. The cash on hand in the State treasury in general revenue fund December 29, 1900, was \$900,630.64.

Penal Institutions and State Charities.—The following shows the average population of the various institutions, based on the records kept during the first six months of 1900: Hospitals for the insane at Clarinda, Mount Pleasant, and Independence, 2870; college for the blind, 138; school for the deaf, 274; soldiers' home, 568; soldiers' orphans' home, 448; institution for feeble-minded children, 854; industrial school for boys, 452; industrial school for girls, 126; penitentiary at Anamosa, 498; penitentiary at Fort Madison, 488.

Legislature.—Two important laws were enacted by the Iowa Legislature relative to the taxation of corporations. One of these, revising the method of taxing telephone, telegraph, and express companies, provides that hereafter the State executive council shall appraise the property of these companies, and that upon the property as thus appraised taxes, both State and local, are to be collected by the same authorities that collect upon personal property, and that the taxes are to be the same in amount as those upon personal property. The corporation taxes are to be considered as final and sufficient for the corporations in question; and, therefore, the owners of capital stock in the companies are not to be taxed. This law simplifies the system previously employed in taxing these companies, and also makes the evasion of taxation more difficult. A second law passed with a similar purpose authorizes the employment by the county board of supervisors of tax inquisitors. The duty of these persons is to make report to the board on personal property "wherever and whenever found," which the property-owner has "neglected" to place upon his tax list. In return for their assistance the inquisitors are to receive a commission of not more than 15 per cent. of the amount by which they have caused the public treasury to be enriched.

An act designed to prevent election frauds absolutely provides that voting machines shall be used in all subsequent State elections. These machines are to be tested by a board of commissioners appointed for that purpose, and are to be so constructed that a vote may be cast with perfect secrecy for any candidate for office; moreover, the machines must rigidly account for every vote cast.

The beet-sugar industry in Iowa, which is rapidly assuming prominence, received legislative encouragement by an act approved April 6, providing that for a period of ten years the following property should be exempt from taxation: First. Mills, buildings, tools and appliances used in the manufacture of sugar. Second. Land, not to exceed in any single case 100 acres. Third. Capital invested in the business of manufacturing sugar from beets raised in Iowa. Fourth. All personal property used in connection with such business. Fifth. The stock of any company engaged in such business.

A municipal code committee, consisting of 3 members from the House and 3 from the Senate, was appointed, in accordance with an act of the Legislature approved April 6, to revise and codify the State laws governing municipal corporations, and to report its findings to the next legislative assembly. An act curiously at variance with opinions recently expressed as to the advisability of absolutely restricting the indebtedness of municipal corporations (see MUNICIPAL GOVERNMENT) was approved on April 6. The act provides that no city or county may become indebted "in any manner or for any purpose" to an amount exceeding in the aggregate $1\frac{1}{4}$ per cent. of the value of its property. This law will tend to prevent cities from acquiring and taking over profit-bearing public utilities by the issuance of bonds.

A resolution was adopted on April 3 requesting the Iowa representatives in Congress to promote the passage of a bill then pending at Washington providing for the appropriation by Congress of \$5,000,000 to be used in furtherance of the St. Louis Fair of 1903. The resolution set forth that at a convention represented by delegates from all those States and Territories which were portions of the Louisiana purchase of 1803 it had been determined to celebrate the centennial of that purchase by holding an exposition of arts, sciences, and industries in St. Louis, and that the people of St. Louis proposed to raise by themselves \$10,000,000 for that purpose.

Constitutional Amendment.—A joint resolution was adopted at the regular session of the Assembly in 1900 proposing an amendment to the constitution for the election of State officers biennially, instead of annually. This resolution having been also adopted by the previous Assembly, was submitted for ratification to the electorate in November, in accordance with the provisions of the constitution. The amendment provides that general elections shall be held in November, 1902, and biennially thereafter. Officers who would otherwise retire in 1901 and in 1903 shall hold office until 1902 and 1904 respectively. The General Assembly is not again to hold session until January, 1903, after the first biennial election. The Assembly will thus meet on the odd, instead of the even, years. This amendment was adopted in November by about 25,000 majority. Now the constitution requires that every ten years this question must be put to the voters, "Shall there be a convention to revise the constitution?" No one expected that in the decennial year of 1900 this question would be answered in the affirmative, and no one, in fact, wanted such an answer; but in some way the voters got the biennial election mixed up with the constitutional revision proposition, and both questions were voted on and decided affirmatively.

Elections.—The State election for governor took place in 1899, when the Republican nominee, Leslie M. Shaw, won by a plurality of 56,000. In 1900 election was held for secretary of state, auditor, treasurer, attorney-general, a Supreme Court judge, and a railroad commissioner. The Republican nominees for these offices were elected with average pluralities of 94,000 votes. The 11 representatives of Iowa in the 56th Congress were all Republicans. In the 57th Congress the representation will also be solidly Republican, the only changes made being as follows: J. N. W. Rumble (Rep.) was nominated and elected in place of J. R. Lane (Rep.); Walter I. Smith (Rep.) was elected in place of Smith McPherson (Rep.), resigned, to serve for the remaining term of the 56th Congress and also for the 57th Congress; J. P. Conner (Rep.) was elected for the remainder of the 56th and for the 57th Congress to fill the vacancy caused by the appointment of Jonathan P. Dolliver (Rep.) as United States senator. The State Legislature consisted in 1899, in the Senate, of 38 Republicans and 12 Democrats, and in the House of 62 Republicans and 38 Democrats. In 1901 the the Legislature will consist, in the Senate, of 34 Republicans and 16 Democrats, and in the House of 81 Republicans and 19 Democrats. In the national election McKinley polled over 307,000 votes, and Bryan over 209,000. In the election of 1896 McKinley polled about 290,000 votes, and Bryan about 224,000. McKinley's plurality thus increased from 66,000 to 98,000. At the beginning of the year 1900 the Republican members of the Legislature, who were in a large majority, nominated John H. Gear by acclamation to succeed himself in the United States Senate for the full term beginning March 4, 1901. At a meeting of the joint Assembly, January 17, Gear was declared elected. After his death Governor Shaw, on August 22, appointed Jonathan P. Dolliver to serve out the unexpired portion of Mr. Gear's first term, ending March 4, 1901. As the Iowa Legislature does not regularly meet again until January, 1902, the senatorship must remain vacant till that time or a special session of the Legislature be called.

State Officers and National Representatives.—State officers for 1900: Executive—governor, Leslie M. Shaw; lieutenant-governor, J. C. Milliman; superintendent of public instruction, R. C. Barrett; secretary of state, G. L. Dobson; auditor, F. F. Merriam; treasurer, John Herriott; attorney-general, Milton Remley; adjutant-general, M. H. Beyers—all Republicans.

Supreme Court: Chief justice, G. S. Robinson (Rep.); associate justices, S. M. Ladd (Rep.), C. T. Granger (Rep.), J. Given (Rep.), C. M. Waterman (Rep.), H. E. Deemer (Rep.); clerk, C. T. Jones (Rep.).

Congressional representatives for 1900 (56th Congress): Thomas Hedge (Burlington), J. R. Lane, D. B. Henderson (Dubuque), G. N. Haugen (Northwood), R. G. Cousins (Tipton), J. F. Lacey (Oskaloosa), J. A. T. Hull (Des Moines), W. P. Hepburn (Clarinda), Smith McPherson, J. P. Dolliver (Fort Dodge), Lot Thomas (Storm Lake)—all Republicans.

Senators for 1900 (56th Congress): J. H. Gear (until 1901), from Burlington, and W. B. Allison (until 1903), from Dubuque—both Republicans.

State officers for 1901: Executive, same as for 1900, except secretary of state, W. B. Martin; treasurer, G. S. Gilbertson, and attorney-general, C. W. Mullan.

Supreme Court: Chief justice, Josiah Given (Rep.); associate justices, S. M. Ladd (Rep.), E. McClain (Rep.), C. M. Waterman (Rep.), J. C. Sherwin (Rep.); clerk, C. T. Jones.

Congressional representatives for 1901 (57th Congress): Same as for 1900, except that J. N. W. Rumble (Marengo), W. I. Smith (Council Bluffs), and J. P. Conner (Denison), replace, respectively, J. R. Lane, S. McPherson, and J. P. Dolliver—all Republicans.

Senators for 1901 (57th Congress): W. B. Allison (until 1903); one vacancy.

IOWA, STATE UNIVERSITY OF, Iowa City, Ia., organized 1847, had in 1899-1900 a faculty of 102, an attendance of 1438, a library of 57,000 volumes, and an income for the year of \$256,684. No important gifts were received during the year.

IRELAND, an island forming part of the United Kingdom, has an area of 32,583 square miles and a population estimated in 1899 at 4,535,516. It is divided into the four counties of Leinster, Munster, Ulster, and Connaught. The executive government of Ireland is vested in a lord lieutenant or viceroy, appointed by the ministry, who is assisted by a chief secretary, lord chancellor of Ireland, attorney-general for Ireland and a privy council. The chief secretary for Ireland, who is the secretary to the lord lieutenant, is responsible to the House of Commons for the official acts of the Irish administration. There is also a Local Government Board, a Board of Works, a Board of National Education, and a Department of Agriculture and Other Industries and Technical Instruction, created in 1899. The police force of Ireland includes the Royal Irish Constabulary and the Dublin Metropolitan Police, numbering in 1899, 12,393 men. Ireland is represented in the House of Commons by 103 members and in the House of Lords by 28 peers.

Emigration.—The population of Ireland is constantly decreasing on account of emigration. The total number of emigrants from Ireland from 1851 to the beginning of 1900 is given at 3,796,131. According to the annual report of the United States commissioner of immigration, the number of immigrants from Ireland to the United States in 1900 was 35,607, against 32,345 in the preceding year. Of the total number, 85 were debarred, 1040 were illiterate, 24,809 brought less than \$30 each, and 6044 had been in the United States before. In regard to destination, 13,289 stayed in New York, 8749 went to Massachusetts, and 1918 to New Jersey.

Religion and Education.—Out of a total population of 4,704,750 in 1891, 3,549,956, or 75.5 per cent. of the population, belonged to the Roman Catholic Church, 600,000 to the Church of England, 444,974 were Presbyterians, 55,500 Methodists, 17,017 Independents, 5111 Baptists, and 3032 Quakers. At the head of the educational system of Ireland are the University of Dublin and the Queen's colleges at Belfast, Cork, and Galway. There is a Catholic university, which includes the University of Dublin and seven Catholic colleges. According to the sixty-sixth annual report of the commissioners of national education, there were at the end of September, 1899, 8670 schools in operation and 290 in the course of construction. The total enrolment of the national schools was over 800,000. There were also 346 special schools, of which 301 were convent national and 45 monastery national schools. The total number of pupils both in the convent and the monastery schools was 107,680, and the average daily attendance, 73,435. The 153 workhouse schools had an enrolment of 5061. There were also 99 island schools and 160 schools attended by half-time pupils, with an enrolment of 5422 and 4753 respectively. According to the census of 1891, 71 per cent. of the population of Ireland could read and write; 11 per cent. read only, and 18 per cent. could neither read nor write.

For statistics of trade and production, and also for the history for the year, see article GREAT BRITAIN.

IRELAND, CHURCH OF, was united to the Church of England by the Act of Union, 1800, but disestablished by an act of 1869, taking effect January 1, 1871. The governing body, a General Synod which meets annually, is composed of two houses, one of bishops and one of clergymen and laymen, the latter body elected triennially by the various diocesan synods. In 1900 the clergy was represented by 13 bishops, 1200 incumbents, and 360 curates; the laity, by an estimated church population of 600,703.

IRON AND STEEL. During the year 1900 there has been great activity in the iron and steel industry, which has extended from the mining of the ore to the manufacture of machinery and other finished articles. Before discussing the condition of this industry during the period under consideration, it is of interest to note the distribution of iron production throughout the world. According to the Society of German Iron Masters, the production of pig iron per head of population in 1898 was as follows:

	Pounds.		Pounds.
Germany	296	Sweden	248
Great Britain.....	476	Italy	1
France	142	Russia	38
Austria-Hungary	64	United States.....	350
Belgium	330		

A more satisfactory basis of comparison, however, is to consider the total production of each country, and from the most recent statistics available the following table has been compiled:

Country.	Year.	Production in Tons.
Great Britain.....	1899.....	9,393,018
Austria	1898.....	957,837
Hungary	1898.....	439,404
Bosnia	1899.....	13,749
Belgium	1899.....	1,036,185
Canada	1899.....	94,077
France	1899.....	2,567,388
Germany and Luxemburg.....	1899.....	8,029,305
Italy	1898.....	12,387
Japan	1896.....	16,000
Russia	1898.....	2,193,750
Spain	1899.....	295,840
Sweden	1899.....	497,727
United States.....	1899.....	13,620,703

The production of pig iron in the United States in 1899 was 13,620,703 long tons, valued at \$245,172,654. During the same year the quantity of iron ore mined amounted to 24,683,173 long tons, valued at \$34,999,077. The iron ore production for 1900 was doubtless still larger, and the unprecedented figures of 1899 probably exceeded by about 1,000,000 tons. About 80 per cent. of this production came from the Lake Superior regions, of which the output for the years 1899 and 1900 is given below:

	1899.	1900.
Marquette Range.....	\$3,757,010	\$3,205,437
Menominee Range.....	3,301,052	3,193,024
Gogebic Range.....	2,795,856	2,752,675
Vamillian Range.....	1,771,502	1,655,799
Mesabi Range.....	6,626,384	7,763,380
Michipicoten (Canada).....		62,000
	<hr/> \$18,251,804	<hr/> \$18,632,315

From these statistics it is seen that the increase was entirely due to the Mesabi district, and that the output of Minnesota for the first time exceeded that of Michigan. Another interesting feature of the Lake Superior production is, that in 1900, 7 mines shipped over 750,000 tons of ore each, while two others shipped over 1,000,000 tons. This shows a remarkable increase in output when it is considered that up to 1890 no single mine in this district had reached a production of 750,000 tons, and up to 1896 but one had produced such an amount.

This enormous output of iron ore from the Lake Superior region is handled largely in specially constructed steel ships on the Great Lakes, and so important has the ore-carrying trade become that there are now about thirty large steel ships in commission or building which have an average capacity of from 6000 to 7000 tons. During the year 1900 the freight rate for the ore delivered at Lake Erie ports was \$1.25 per ton, but this will probably be reduced by nearly 50 cents during the coming season. There was also considerable activity in iron-mining in the Southeastern States, but, as usual, most of the output is from Alabama.

The production of the different classes of pig iron in the United States for 1899 and 1900 is given in the following table:

	1899.		1900.	
	Tons.	Per Cent.	Tons.	Per Cent.
Foundry and forge iron.....	4,213,124	30.9	4,464,529	32.1
Bessemer pig.....	8,202,778	60.2	8,124,255	58.4
Basic pig.....	985,033	7.3	1,058,542	7.6
Spiegel and ferro.....	219,768	1.6	267,270	1.9
	13,620,703	100.0	13,914,596	100.0

There is, accordingly, an increase of 293,893 tons in the amount of pig iron produced during 1900 over the production for 1899. As a result of this activity nearly all of the furnaces which could be worked were in active operation during the year, including some of the older furnaces in eastern Pennsylvania, New Jersey and elsewhere, which, on account of their location and other causes, can be run at a profit only when the price of iron is abnormally high. Four large blast-furnaces—two at Chicago, one at Thomas, Ala., and one at La Follette, Tenn.—have been completed, and a number of others are being erected, so that in 1901 there will be 23 new blast-furnaces available. Making allowance for those to be put out of commission, this gives an increased annual net producing capacity of 3,000,000 tons of pig iron per annum. No official figures of the production of steel during 1900 are available, but it is estimated to have been 10,980,000 tons, of which 7,500,000 tons were Bessemer steel, 3,225,000 tons open-hearth steel, and 155,000 tons were crucible and other special steels. Exports of iron and steel from the United States, principally in the form of pig iron, rails, steel billets, bars, plates, structural steel, and machinery, amounted in value to \$121,913,548 for the year ending December 31, 1900, as compared with \$93,716,031 in 1899.

Turning to the figures for the other leading iron-producing countries, we find that, like the United States, they show great activity in iron and steel production. The following table gives the production of iron and steel for 1900 in the foreign countries for which statistics are available:

	Pig Iron. Tons.	Steel. Tons.
Great Britain.....	9,150,000	5,100,000
Germany	8,406,370	6,780,000
France	2,683,000	1,625,000
Belgium	975,000	.....

These figures are partly estimated and partly official. From them and the reports from other foreign countries the total production of pig iron in the world for 1900 was estimated at 41,750,000 tons, and of steel at 27,500,000 tons. During the year Canada entered the field as an iron-producing and steel-making country on a comparatively large scale. American capitalists, following up their purchase of the Sydney coal fields of Cape Breton, Nova Scotia, have purchased a portion of the Bell Island, Newfoundland, iron mines, and commenced work during 1900 on a large coke-making plant, blast-furnaces, and steel works at Sydney. These plants had reached an advanced stage of construction at the close of the year. A similar project for using Cape Breton coal and Bell Island ore in manufacturing steel on a large scale was set on foot by the Nova Scotia Steel Company, and will doubtless be carried well on toward completion in 1901.

Technology.—The changes in the technical details of steel and iron manufacture during 1900 consist, for the most part, in improvements looking toward increased economy and improved quality of the product, and in the better handling of large quantities of material. Under this head may be included improved machinery for loading iron ore from vessels to cars, and cars to vessels, at ports on the Great Lakes, and the increased use of steel cars of large capacity made up into heavy trains and hauled by locomotives of great size. Several improvements have been made in charging machines for blast and steel furnaces, and the pig-iron casting machine, which is now a necessary attachment to all large furnaces, has been further improved. In steel making the Talbot continuous process has been introduced into Great Britain from the United States, and the Morrell open-hearth process has been tried at the Carnegie Steel Company's works, it is understood, with very satisfactory results. The use of blast-furnace gases in gas engines for the production of power has extended rapidly in Germany and Belgium, nearly 35,000 horse power being thus produced at the end of 1900. The study of the possible uses of blast-furnace slag was continued during the year by C. von Schwartz, A. D. Elbers and others. It has been employed in making sand bricks, cement, and sometimes for fertilizer, particularly when it contains a sufficient percentage of phosphorus. One method

of making slag cement is to use slag obtained from a furnace producing grey iron. It is first granulated by running it while hot into a stream of cold water, so that sand is produced. This material is then dried with equal quantities of limestone, and to it is added powdered slaked lime. The whole is then finely pulverized, so that it will pass through a sieve which has 5000 meshes to the square inch, as the proper degree of fineness is essential to the proper setting of the cement. The powdered mixture is made up into bricks with 8 per cent. of water, and after standing in the air for a few days it is burned to clinkers in a kiln. These clinkers, when ground and made into briquettes, show a tensile strength after 28 days of 282-370 pounds per square inch, and after 360 days of 538-700 pounds per square inch (*Journal Iron and Steel Institute, I., 1900*).

Mr. Elbers has suggested its use in making artificial stone for building purposes, and a number of experiments in this field are being tried.

What seems to be an important improvement in rail manufacture was given a trial at one of the works of the Carnegie Steel Company during the year, and consists in an arrangement for allowing the rail to be finished at a lower temperature without affecting the rapidity and quantity of production. Among the minor improvements worthy of mention are the building of a plant near Chicago for making steel castings by the Tropenas process; the use of molybdenum, tungsten, and vanadium in making special steels, and the tests now in process on nickel-steel rails. The advantages of drying the blast for blast-furnaces and converters were seriously discussed during the year, and at its close the prospects were that the near future would see experiments in this direction constructed on a large scale.

Trade.—The outline history of the steel and iron trade for 1900 was substantially as follows: A period of high prices; a sharp break in quotations accompanied by a falling off in business; a period of somewhat more active trade at low prices, and finally a recovery in prices, but to a point much below that at which the year opened. The tendency toward the formation of large industrial corporations by consolidation, which was so marked a feature of 1899, continued to a less extent during 1900, and conversely there was a noticeable movement to organize new companies to enter into competition with the combinations. Some of these new organizations were undoubtedly formed largely for the purpose of selling out to the combinations, but others were legitimate undertakings. The following table shows the prices for each month of 1900 at which pig iron and steel sold at Pittsburg, Penn.:

PITTSBURG MONTHLY PRICES PER TON OF IRON AND STEEL.

	Jan.	Feb.	Mar.	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Bessemer pig iron	\$25.00	\$24.90	\$24.00	\$24.90	\$24.90	\$20.00	\$17.00	\$15.75	\$14.00	\$13.25	\$13.50	\$13.50
Basic.....	23.75	23.00	23.00	23.00	23.00	19.00	15.25	14.50	13.25	13.00	12.50	12.50
Foundry No. 2.....	23.00	23.00	22.50	21.75	19.50	18.00	15.50	14.50	13.50	13.75	14.00	14.00
Gray forge.....	21.00	21.00	21.00	20.00	19.00	17.00	15.00	14.25	13.00	12.75	13.00	13.25
Bessemer steel billets.....	35.00	35.00	34.00	32.00	28.00	24.00	19.00	18.00	17.50	16.75	19.75	19.75
Sheets No. 27.....	2.90	2.90	3.00	3.20	3.05	2.90	3.10	2.90	2.80	2.70	2.85	2.90
Sheets No. 28.....	3.00	3.00	3.10	3.30	3.15	3.00	3.20	3.00	2.90	2.80	2.95	3.00
Tank plates.....	2.25	2.15	2.00	1.80	1.60	1.40	1.10	1.05	1.05	1.10	1.35	1.35
Steel bars.....	2.25	2.25	2.05	2.00	1.75	1.45	1.05	1.15	1.15	1.20	1.25	1.25
Steel rails.....	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00
Wire nails.....	3.20	3.20	3.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20
Cut nails.....	2.50	2.50	2.50	2.50	2.05	2.05	1.95	1.95	1.95	1.95	1.95	1.95
Ferromanganese.....	100.00	100.00	100.00	125.00	100.00	100.00	85.00	85.00	75.00	75.00	62.50	62.50

American Iron and Steel in Europe.—It is generally admitted that the keystone of commercial supremacy in the modern world is the production and conversion of pig iron, for on these depend rapid communication, naval and military strength, and the manufacturing industries. Fifteen years ago the English production of pig iron was nearly double that of the United States, being 7,811,727 tons in 1884 as against 4,097,867 by the United States. But in 1899 the United States produced over 4,000,000 tons more than Great Britain, the estimated amount of the former being 13,620,703 and of the latter 9,363,018. In 1898, moreover, Great Britain imported, mainly from Spain, nearly 5,500,000 tons of pig iron for use in the manufacture of Bessemer and Siemens steel. In the world's production of pig iron for 1898 the United States made 32.8 per cent.; Great Britain, 24 per cent., and Germany, 20.3 per cent. Of steel, the United States made 37.6 per cent.; Germany, 23.9 per cent., and Great Britain, 19.3 per cent. At the same time, and because of the still ravenous American iron and steel markets, British exports of those products have been largely in excess of American exports. But the British exports are declining, while those of America are increasing. British exports of iron have fallen off nearly 100 per cent. since 1884, while the United States exports were in

1898 three or four times as great as in 1889. English exports of rails and other railway supplies amounted in the early seventies to nearly £10,000,000 yearly; in 1898 they had fallen to about £3,000,000. During the same period American exports of the same materials increased in amount from one-seventy-fourth to one-half of the British. In 1898 the total production of rails in the United Kingdom was 772,035 tons; that of the United States was 1,981,241 tons, or nearly two and a half times as much. The apparent inference from these figures is that with the glutting of the American markets exports of very great magnitude will follow. In the matter of finished iron and steel products the statistics are similar. American exports of stationary engines have increased 200 per cent. in ten years (from 1889 to 1898), while British exports have fallen off 22 per cent. American exports of locomotives have increased 300 per cent., and British exports in the years 1889 and 1898 were approximately equal. Many reasons are advanced by British writers to account for the increasing prominence of the American iron and steel trade, and some of these include a rebuke and warning to their countrymen. In discussing the greater richness of American ore it is pointed out that this is more than balanced by the distances over which ore is hauled in America; for instance, from Lake Superior to Pittsburg, including two reshipments. And it is added that a more crucial element than the richer ore renders it possible for iron mined at Lake Superior to be shipped to Buffalo and there foundried, reshipped to New York, a total distance of nearly 2000 miles, and from there sent to Australia to compete with British products in a British colony. The building by an American firm of the great Atbara Bridge for the railroad to Khartoum in 1898, and the supplying of American locomotives for the Midland Railway in 1899 are other instances which the English cannot forget. Since the great engineering strike attention has been pretty sharply fixed upon the method of the British trades unions. An accurate demarcation of their attitude is almost impossible, but their position seems fairly well outlined by the statement in the official *Journal of the Amalgamated Society of Engineers*, that "Labor-displacing machinery means an ever-increasing obstacle to be faced." Now it is understood in England that the tendency in America is so overwhelmingly in favor of labor-saving machinery and devices that few native-born Americans care to undertake simple and continuous manual labor, and it is to this man-displacing process that America's present position in the industries is largely due. That the American workmen themselves appreciate that this labor-saving process is to their own advantage was shown at the annual meeting of the American Federation of Labor in 1899, when opposition to anti-trust legislation was declared on the ground that it was likely to injure organized labor. Since the trusts are the great users of labor-saving machinery—and the larger the trust the more extensive are the labor-saving devices employed—the inferential reasoning in favor of "labor-displacing machinery" is evident. The wages, observes an English writer, which American workmen draw would make many English employers gasp. They work, he adds, on the "piece system" wherever it is possible, and the more work they turn out the higher are their wages, and the cheaper does the employer obtain his product. In contrast to this is the position taken by the Amalgamated Society of Engineers in England. Rule XXXIX. of that society reads: "Any member asking for or taking work by contract or piecework in any firm or factory where piece contract work does not at present exist shall for the first offence be fined 20s., for the second 40s., and for the third be expelled from the society; and in no case shall piecework be engaged in any firm or factory where it does not at present exist." Even where, in American factories, workmen are paid by the day, it is claimed that a closer approximation is made between efficiency and payment, and that the workmen are in general more intelligent and ambitious. Again it is said that English managers themselves are too conservative in the equipment and maintenance of their plants and particularly in the placing of contracts. Instances are given, by way of contrast, of American steel concerns which *made* business by employing experts to prove to architects and builders that steel frameworks could be advantageously used on proposed buildings; a more striking example is that of the Pressed Steel Car Works, which literally created a market for steel cars. The Englishman turns out work on well-defined patterns and is more willing to wait the demand for it. And he is not always willing to modify his product to meet special requirements. In this way the colonial trade for less specialized and massively built locomotives than are used in England has gone in considerable amounts to America. For the American will alter his plan to fit the job, and is willing to lose money on it if he sees an opening market. The plan—carried to a less extent in England—of working night and day is another aid toward a cheap product. An example of the difference of method of English and American iron masters is furnished by an English writer. Blast-furnaces in America, he says, are driven hard, with the consequent result that they have to be relined every three or four years—and furnace relining is a costly operation. In England, where the furnaces are driven at much lower blast, the linings some-

times last 18 years. Of course the higher the blast the more pig iron is turned out, and the American position is that "a lining is good for so much pig and the sooner it makes it the better." The English iron master says that more money would be lost in relining than would be gained on pig. But he may not take into sufficient account the larger number of furnaces which his economy necessitates, and the men to run them, and the additional fixed charges.

IRRIGATION. The question how to furnish water to the arid lands of the West has not yet passed the stage of discussion and controversy. Upon one point, however, there seems to be a general agreement, that the problem is too vast, both in its geographical and financial aspect, to be solved by private enterprise or by individual States, and must be taken up, at least in a preliminary way, by the national government. But while it is conceded by all interested parties that the initial step must be taken by the general government, opinions differ greatly as to the extent to which this work should be carried on by the nation. Some of those favoring actual construction maintain that the national government should merely build great storage reservoirs, under the direction of the corps of engineers of the army, as is done in the case of river and harbor works, and that the distribution of the water and the construction of distributing canals and ditches should be left to the States and to private enterprise. Others would have the national government control both the water and the land through which it is distributed, believing that the value of the land and water would be so interdependent that they would require common management. The Department of Agriculture has taken up the question of the use of the water after it has been obtained, and has directed its attention to conditions in the arid regions of the West. One of the first problems considered, which is really preliminary to the main one, has been the determination of some basis for the settlement of disputes over water rights for irrigation. There is no little uncertainty in many matters connected with this subject, which has been increased by the fact that the farmer frequently has no idea of the amount required to bring about the best results on his land, and claims more than he actually needs.

Another problem under discussion is the application of irrigation methods in the East. Curious as it may seem, irrigation can often be profitably practised in the moist climate of the Eastern States, especially during abnormally dry seasons, and in portions of New Jersey, for example, some very satisfactory results have been obtained by this means.

By the proper application of water a farmer may at times save a valuable crop from total destruction. There is a general awakening to the necessity that steps should be taken immediately to prevent the deforestation of the land about water supplies. The effect of forests is to decrease the evaporation of water, and to distribute more evenly and over longer periods its removal through water courses. The forest thus confers the benefits of diminishing the danger of floods and increasing the flow of water through seasons of drought. The general status of public opinion upon the subject of irrigation is reflected in the following resolutions, which were adopted at the ninth annual meeting of the National Irrigation Congress, held at Chicago in November, 1900:

(1) We urge upon Congress that national appropriations commensurate with the magnitude of the problem should be made for the preservation of the forest and the reforestation of denuded areas as natural storage reservoirs and for the construction by the national government, as a part of its policy of internal improvement, of storage reservoirs and other works for flood protection and to save for use in aid of navigation and irrigation the waters which now run to waste and for the development of artesian and subterranean sources of water supply.

(2) The waters of all streams should forever remain subject to public control and the right to the use of water for irrigation should inhere in the land irrigated and beneficial use be the basis, the measure and the limit of the right.

(3) The work of building the reservoirs necessary to store the floods should be done directly by the government under existing statutes relating to the employment of labor and hours of work and under laws that will give to all American citizens a free and equal opportunity to get first employment and then a home on the land.

(4) We commend the efficient work of the various bureaus of the national government in the investigation of the physical and legal problems and other conditions relating to irrigation, and in promoting the adoption of more effective laws, customs and methods of irrigated agriculture, and urge upon Congress the necessity of providing liberal appropriations for this important work.

The great possibilities of national development that will be opened up by a general system of irrigation by whatever agency provided are evident when it is remembered that one-third of the whole United States, not including Alaska or foreign possessions, is still unoccupied, and at the disposal of the national government, and that much of this land is naturally fertile except for the lack of water.



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IRRIGATION IN THE WEST.—1. A Wyoming Sheep Ranch, before Irrigation. 2. Canal at Mesa, Arizona. 3. Digging an Irrigation Canal in Nebraska. 4. Irrigation Ditch Mesilla Park, New Mexico—This has been three hundred years in continuous use.

Among the recent publications may be mentioned one by F. H. King on *Drainage and Irrigation*.

ISTHMIAN CANAL COMMISSION. See NICARAGUA CANAL.

ITALIAN LITERATURE. *History.* There have been quite a number of useful historical works issued in Italy during the past year, but the most important event in this field is not the publication of a new work, but the reissue of an old one, Muratori's *Rerum Italicarum Scriptores*. This great collection of early Italian chronicles, which first appeared at Milan in 1723-51, was unquestionably a remarkable achievement for that period; but the texts are often defective, whole passages sometimes being omitted, and need has long been felt for a new and critical edition. The project is at last being carried out under the direction of the veteran poet and professor of literature, Giosuè Carducci, and the first two volumes have already appeared. They contain the *Historiæ Miscellæ* of Landolfo Sagace, edited by Vittorio Fiorini, whose literary work already includes an important volume upon early Italian manuscripts; and the *Lives of the Doges*, by Marin Sanudo, edited by Giovanni Monticolo, who occupies a chair of history at Rome, and has based this edition upon the original text preserved at Venice, while Muratori evidently had access only to a mutilated copy. Among the year's new contributions to history emphasis should be laid upon the *Civil and Political History of the Papacy*, by the Marchese Nobili-Vitelleschi, the distinguished Italian statesman whose important volume on the Ecumenical Council entitles him to be regarded as an authority upon church history. His new work covers the period from the first century of the Christian era down to the reign of the Emperor Theodosius. Achille Plebano, for many years editor of the influential Roman journal, the *Fanfulla*, and an authority on finance and banking, has just completed the second volume of his *History of Italian Finance*, bringing the subject down from the time when the party of the Left came into power to the death of Depretis. It is a work which merits the attention of students both of history and economics. A political, civil, and military history of the House of Savoy, from its origin to the present time, is being written by Giuseppe Jovine. The first volume has already been issued by a Neapolitan house. It is somewhat more than a year since Professor Pietro Orsi's *Modern Italy*, giving a rapid survey of the last hundred and fifty years, was published in English in the Stories of the Nations Series. It has since been issued in Italian, and has received much favorable notice. Among the monographs on local Italian history the following seem to deserve special mention: *A History of Civitavecchia*, by Carlo Calisse; a curious and painstaking study, by Ludovico Frati, of private life in Bologna from the thirteenth to the seventeenth century; and two sumptuous volumes dealing respectively with Florence and Naples. The former of these is entitled *The Centre of Florence; Historical Studies and Artistic Memories*, and is issued under the auspices of the Commune of Florence. The other is entitled *Naples of To-Day*, and consists of a collection of papers contributed by a score of the leading Neapolitan writers—among others the novelist, Matilde Serao, and the dramatist, Roberto Bracco—describing the various aspects, topographical, social, and intellectual, of contemporary life in Naples. Professor Giovanni Oberziner, an archæologist of some repute and author of a long list of volumes dealing with the struggles of the Roman Empire against barbarians from the north, this year publishes *The Wars of Augustus Against the Alpine Tribes*, a large quarto volume, provided with numerous maps. Two volumes dealing with the Napoleonic period should be mentioned. The first, by E. Barone, an officer in the Italian army, forms the first instalment of an interesting *Study of the Conduct of the War of 1814 in France*. The second is a curious and hitherto unpublished correspondence, consisting of letters exchanged between a certain Count Antonio Greppi and his son, Paolo, who was living in Paris from the year 1791 down to the close of the century. These letters are now issued by a descendant, the present Count Greppi, under the title *The French Revolution in the Letters of an Italian Spectator*.

Biography, Literary Criticism, etc.—It is more difficult than usual this year to draw a definite line of demarcation between biography and literary criticism, since, with the exception of two or three lives of the late King Humbert, announced in December for early publication, the volumes worthy of mention under this head are confined almost exclusively to biographies of distinguished authors. A new and important addition to the excellent Pantheon series, published at Florence, is a life of Petrarch, by Giuseppe Finzi. It is a curious fact that, in spite of the rich amount of available material which makes such a volume a comparatively easy task, no thorough and critical biography of Petrarch has appeared in Italy within the last century. Consequently Professor Finzi's volume fills a rather serious gap; it has been highly praised as a careful and scholarly piece of work, and contains some especially interesting chapters upon certain special aspects of the poet—his humanistic studies, his love for Italy, his ethics, etc. *From the Mind to the Heart of Giovanni*

Boccaccio, by Eugenio Rossi, is the title of a rather odd book which seeks to give some chapters from the intimate life of the author of the *Decameron* by tracing the relation which the various women whom he loved bore to that famous work. Monographs on Dante have been rather more numerous than usual. The Dante lectureship recently inaugurated in the hall of the Loggia of Orsanmichele, at Florence, has had the effect of awakening a renewed interest, and lectures on Dante and readings from his works have been given in all the large cities of the peninsula. Recent publications include two new volumes in the Biblioteca Storico-Critica della Letteratura Dantesca, edited by G. L. Passerini and P. Papa: *Dante and Heresy*, by Professor Felice Tocco, and *The Historical Character of Folchetto da Marsiglia*, by Nicola Zingarelli. Signor Passerini is also editor of the valuable Collezione di Opuscoli Danteschi Inediti o Rari, to which have lately been added *Scritti Danteschi*, by Parenti, and *Agricoltura ne' Tempi di Dante*, by Professor Giglioli. Other volumes deserving brief mention are *Woman in the Divina Commedia*, by M. P. Michelangeli; a new volume in Carlo di Balzo's comprehensive collection of *Poems from a Thousand Authors Concerning Dante*; and the Milan lectures of the Società Dantesca, announced for early publication under the title *Italian Life and Culture in the Time of Dante*. Other works relating to early Italian authors are: *The Ricciardetto of Niccolò Forteguerri*, by F. Bernini; the second volume of A. Rossi's exhaustive work upon *Francesco Guicciardini and the Florentine Government from 1527 to 1540*, of which the first part was issued in 1896; and two monographs upon Bandello: the first a careful study of *Italian Life in the Sixteenth Century as Revealed in Bandello's Novelle*; the second, *The Proverbs of Bandello*, by Professor M. Mandalari, who adds many interesting parallels from modern writers, including Schopenhauer. That eighteenth-century prodigy of precocious learning, Maria Gaetana Agnesi, forms the subject of a discriminating volume by Luisa Anzoletti, a young poet and journalist, who a few years ago received a gold medal at the Exhibition Beatrice for her lectures upon *The Italian Woman in the Eighteenth Century*. Among the writers of the nineteenth century Leopardi continues to hold a leading place. Besides the fourth, fifth, and sixth volumes of his *Pensieri di varia Filosofia e di Bella Letteratura*, now in course of publication under the care of a government commission, this year has seen issued a new edition of his poems, edited by Michele Scherillo, who has added a voluminous critical and historical commentary; a unique *Life of G. Leopardi, Written by Himself*, consisting of a series of extracts from Leopardi's letters and other writings, ingeniously dovetailed together by Signor Giuseppe Piergili into the form of an autobiography. Giovanni Negri, who is professor of Italian literature at Pavia, has just published a sixth volume of his *Divagazioni Leopardiane*. The *Autobiographic Notes of Francesco Domenico Guerrazzi*, edited by Signor Guastalla, throw some interesting light upon the romanticism of the author of *The Siege of Florence* and his contemporaries. They were written in the fall of 1833, during one of Guerrazzi's numerous imprisonments, and, as the present editor points out, are more sincere than anything that he wrote later about himself, when his greater fame in literature and politics tended to make him adopt a pose. The new volume of annual *Florentine Lectures Upon Italian Life*, which for the last three years have dealt with the period of the *Rinascimento*, contains several admirable literary studies, including "Poetry in 1848," by Enrico Panzacchi; "G. G. Belli," by Arturo Baccelli; "Giuseppe Giusti," by Isidoro del Lungo, and "Monti and Foscolo," by Vincenzo Morello. One of the most important studies upon contemporary writers which have recently appeared in Italy is *Antonio Fogazzaro: His Life and His Works*, by the well-known Venetian critic and historian, Pompeo Molmenti. Although somewhat too enthusiastic in its praise, it forms a comprehensive and delightful survey of the author of *Piccolo Mondo Antico*, whom each succeeding year places higher in the ranks of contemporary Italian men of letters. Another novelist who is winning the widespread recognition that she has long deserved is Matilde Serao, whose principal stories have lately enjoyed much favor in Paris, while a translation of her collected works will probably appear in English within the coming year. A discriminating study of Signora Serao and her works, written by Gemma Ferrugni, appeared in the *Nuova Antologia* for October. Meanwhile a volume of Serao's essays, reprinted from the *Mattino del Napoli*, where they appeared from day to day over her pseudonym of "Gibus," has been published under the title of *Saper Vivere*.

Quite an unusual number of volumes of literary essays remain to be briefly noted. Of special importance is *The Color of the Times*, by Ferdinando del Roberto, the keen-sighted psychologist, who two years ago published a searching study of Leopardi, and whose volume contains interesting essays upon Tolstoy, Maeterlinck, Nietzsche, Sully Prudhom, and Nordau. Still another critic known especially as a student of Leopardi is Giuseppe Chiarini, whose new volume of *Literary Studies*

and *Portraits* contains a rather notable essay upon the married life of Thomas Carlyle. The critic who prefers to be known under the pseudonym of "Evelyn" has published a collection of papers upon *A Few Modern English Poets and Prose Writers*, including Keats, Ruskin, Kipling as the ideal of patriotism, and William Morris as the ideal of humanity. Deserving of mention are Diego di Roberto's *Contemporaneous French Poets*, ranging from Verlaine to Henri Regnier; *William Shakespeare, the Poet and the Man*, by Federigo Garlanda; *Neo-Latin Poetry in Italy from the Fourteenth Century to the Present Day*, by Arnaldo Bonaventura, and the third volume of a *History of Letters in Sicily*, by R. Salvo di Pietra Ganzili. In conclusion two studies of classical literature deserve mention: *The Origin of the Greek Fable and its Relations to the Oriental Fable*, by Michele Marchiano; and *Cicero and His Social and Economic Ideas*, by E. Masedari, who has here studied a side of the life and mind of Cicero hitherto neglected, and discusses at length the Roman statesman's views of social equality, division of classes, plutocracy, demagoguery, etc.

Poetry.—The recent efforts of Italian poets may be summed up very briefly. Of first importance is Gabriele d'Annunzio's *Laudi del Cielo, del Mare, della Terra, e degli Eroi* (Praise of Heaven, Ocean, Earth, and Heroes), part of which has appeared in the *Nuova Antologia*, and which he is now occupied in revising for publication in book form. They are poems full of exquisite images and lofty thoughts, and give further evidence of D'Annunzio's consummate mastery of form. Giovanni Pascoli, one of the most finished of the younger poets and almost equally admired for his Latin and Italian verse, has published a volume of *Poemetti*, nearly all of which deal with rural subjects. Vittoria Aganoor, whose Armenian ancestry is revealed in the wealth of color and the oriental languor that characterize all her poems, shows in her latest volume, *Leggenda Eterna*, a deeper feeling and a more thorough mastery of form than in any of her previous poems. Severino Ferrari, of the University of Bologna, gives us a new volume of sonnets entitled *Primavera Fiorentina*; and Emanuele Sella, author of an important volume upon Italian emigration, publishes this year a volume of lyrics, *Questo e Sogno*, which have been much admired for their graceful imagery and for their suggestion of the Florentine poets of the thirteenth century.

Fiction.—It was formerly the complaint of Italian novelists that their countrymen preferred to go abroad for their fiction. Recently the international repute acquired by D'Annunzio, Fogazzaro, Verga, Matilde Serao, and one or two others, has visibly had the effect of stimulating the home market for Italian novels; but during the past year the greatest popular success enjoyed by any one story was that of Sienkiewicz's *Quo Vadis*. Aside from the authorized version by Federigo Verdinois, which met with immediate favor from the critics, popular editions were multiplied, several of them appearing simultaneously as *feuilletons* in the daily papers, while a dramatized version had a long and successful run at one of the Roman theatres. On the strength of this success a translation of Lew Wallace's *Ben Hur* was recently issued, but has so far failed to attract any widespread notice. The leading Italian novelists have been singularly unproductive this year. Verga is still working upon his long-delayed *Duchessa di Leyra*. Fogazzaro has at last finished his *Piccolo Mondo Moderno*, and its publication in the *Nuova Antologia* was deferred and will be one of the literary events of the coming year. De Amicis seems to have retired definitely from the ranks of novelists; but his new volume, *Memories of Childhood and of School*, has the mingled charm of fiction and of autobiography. Among the writers of the first rank D'Annunzio alone has been productive, and his *Fuoco* (Flame of Life), which forms the first volume in his new trilogy, *Romances of the Pomegranate*, cannot fail to delight the reader who has the ear to appreciate the exquisite rhythm of his flexible and cadenced prose, whatever one may think as to the subject-matter. In form, *Fuoco* is a prose poem, full of the splendor, the glowing color, of Venice; in theme it is a ruthless dissection of a human soul, an extreme instance of a man's egotism and a woman's self-sacrifice, the unpleasantness of which is scarcely aggravated even by the fancied identification of the heroine with the well-known actress, Signora Duse. Other volumes deserving mention are: *Anime Nude*, a collection of keen psychological studies by the Sicilian "verist," Capuana; *I Mieî Racconti*, a volume in which Enrico Panzacchi, the poet, has gathered together a number of fugitive love stories and scraps of biography; *In Balia del Vento*, a new story by Bruno Sperani, best known for her admirable *Numeri e Sogni*, published about five years ago; *Il Diritto del Amore*, short stories by the dramatist, Roberto Bracco, and a characteristic romance by the indefatigable A. G. Barrili, *Re di Cuori*. Among lesser-known writers the following deserve to be emphasized: *Il Tribuno di Montecitorio*, by Luigi Marrocco Diprima, who seeks to draw the contrast between the wretched life of the very poor in Rome and the frivolity and licentiousness of parliamentary life; and *Salvezza*, by Guglielmo Anas-

tasi, the dramatic critic of the *Caffaro of Genoa*—a symbolic novel, the hero of which is a young composer who has placed his ideal at a superhuman height, and, finding attainment impossible, is about to commit suicide, but is taught new hope and faith through a woman's love.

ITALY, a kingdom of southern Europe, includes the islands of Sardinia and Sicily and some 66 minor islands of the Mediterranean and the Adriatic. The total area, according to the latest military surveys, is 110,674 square miles, of which nearly 75 per cent. is suitable for agriculture. The population December 31, 1897, was 31,479,217; at the beginning of 1900 it was estimated at 31,856,675. The increase would have been much greater if the country had not lost by emigration nearly 300,000 people annually. The chief cities are: Naples, with a population of 540,393; Rome, 500,610; Milan, 481,297; Turin, 355,800; Palermo, 290,951; Genoa, 232,777; Florence, 212,898, and Venice, Bologna, Messina, Catania, and Leghorn, all above the hundred-thousand mark. The government of Italy is a limited monarchy under the old Sardinian constitution of 1848, modified on the occasions of accessions of territory before 1871. The Parliament is composed of the Senate, whose members, 338 in number, are appointed for life by the crown, and of a popular chamber of 568 deputies, elected by practically universal suffrage. The king is assisted by a cabinet of ministers, who are responsible to the Chamber of Deputies. The reigning monarch is Victor Emmanuel III. of the House of Savoy, who succeeded his murdered father, Humbert, on July 29, 1900, and swore allegiance to the constitution on August 11. The present ministry, formed in June, under Humbert and retained by his son, is constituted as follows: Premier and minister of the interior, Sarraco; foreign affairs, Visconti-Venosta; war, Ponzia di San Martino; navy, Morin; justice, Giannurco; treasury, Rubini; finance, Chimirri; public works, Branca; public instruction, Gallo; agriculture, Carcano; posts and telegraphs, Pascolato.

Religion and Education.—Roman Catholicism is almost the exclusive religion in Italy, there being only about 65,000 Protestants and 40,000 Jews. The government, however, is extremely jealous of the Vatican, and has taken care to assert its power over the Pope. One of the questions at present under consideration by the Parliament is that of the validity of religious marriages. The state by statute has made marriage a civil contract, but Catholics are forced to regard the ceremony as a sacrament, which can be administered only by the Church. As a result there are over 100,000 couples living in illegal wedlock, and the question of disputed succession and inheritance has become very serious. Compromises have been suggested whereby the Church would celebrate marriage and the state register it; but the hostile attitude of the Vatican to the new government has made conciliation improbable, and may prolong the present status. Education is under the direction of the state and the municipalities; attendance between the ages of 6 and 9 is compulsory, and large stipends are distributed by the central government to the communes for the support of elementary schools. In 1899 there were about 50,000 students in the secondary schools and 2,500,000 pupils in the primary schools. Detailed statistics for recent years are not available, but in 1896 there were 2,379,349 children in the public schools, and 210,074 in the private schools. The *licei* were attended by 17,689 students, the *ginnasi* by 59,578, the normal schools by 24,152, the technical institutions by 47,579. There are 21 universities in the country, of which the chief are Naples, with 5165 students (1900-01); Turin, 2805; Rome, 2348; Bologna, 1590; Padua, 1569; Palermo, 1395; Genoa, 1278, and Pisa, 1103. The government supervises the universities, and the minister of education dictates the general courses of instruction, and has the appointing of the professors and other instructors. In spite of the large number of educational institutions, the percentage of illiteracy in Italy is surprisingly high. This is especially true in the southern part of the kingdom, where the effects of the Bourbon rule are still very noticeable in the poverty and degradation of the inhabitants. The attention of Parliament was called in 1900 to the miserable condition of the school-teachers throughout the country. The average salary of a college tutor in Italy is about 1000 lire (\$193), and the pay of a school-master in the country schools is very much less. Under the plea of economy district schools are often closed and the instructors left to shift for themselves. In 1900, 10,000 teachers petitioned Parliament for legislative relief; but the condition of the national finances made speedy action impossible.

Emigration has attained such vast proportions as to receive the attention of the government. In the two Americas there are now nearly 2,000,000 Italian subjects. The southern parts of Italy furnish 80 per cent. of the emigrants, whose chief destinations are the United States and Brazil, a considerable number going also to Egypt. In 1890, 217,244 men, women, and children left the country; in 1895, the number was 293,181; in 1899 it increased to 308,339, and in the first half of 1900 to 226,335. The immigration into the United States for the year 1897-98 was 56,641; for 1898-99, 76,489; for 1899-1900, 99,019. The bad economic conditions of the country, especially of Apulia, Calabria, and Sicily, is responsible for the immense



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annual exodus. The effects of the famine of 1898 are still felt, and the government, far from trying to prevent emigration, has taken steps to regulate and facilitate it. There is a commissioner-general, who makes contracts with the navigation companies, fixes the rate of transportation, and exercises a general supervision over the emigrants, who are, for the most part, ignorant and illiterate. The effects of governmental control, however, have not been very beneficial. Certain companies have acquired a monopoly of the passenger traffic, and have used their advantage to charge exorbitant rates for very bad service, while to pay the expenses of the commissioner and his department the emigrants are taxed 8 lire (\$1.54) a head. The remedying of these evils and the adoption of measures for the protection of Italians in their new homes were made leading features in the ministerial programme, outlined by the Sarraco cabinet.

Finance.—Revenue is derived from direct taxation (land, houses, incomes, inheritances, registration, and stamps); indirect taxation (excise, customs, and octroi); state enterprises (railroads, telegraphs, post, and public domains), and state monopolies (tobacco and salt). The budget for the fiscal year 1897-98 stood as follows: Income, 1,668,720,282 lire; expenditures, 1,669,407,855 lire; for 1898-99, income, 1,694,627,278 lire; expenditures, 1,702,316,483 lire; for 1899-1900, income, 1,700,645,824 lire; expenditures (estimated), 1,701,791,875. Italian finances during the last decade of the nineteenth century were in a very unsatisfactory condition, the annual budget being almost invariably closed with a deficit, while incompetence and maladministration served to increase the gulf between revenue and expenses. But a brighter era seems to be dawning, to judge from the report made in the Chamber of Deputies on December 2, 1900, by Rubini, the minister of the treasury. This showed that the budget of 1898-99 had balanced, and that an estimated deficit of 22,000,000 lire in the budget of 1899-1900 had been turned into a surplus of 5,000,000 by a great increase in the revenue, which rose to 32,000,000 lire above the estimates. The estimates for 1900-01 showed a deficit of 19,000,000 lire, of which 13,000,000 were to pay the unforeseen cost of the Chinese expedition; and the estimates for 1901-02 presented a deficit of 18,000,000, but there was no doubt that these would be more than counterbalanced by the rapidly increasing income from the railroads, telegraphs, and customs. Before a firm financial status can be attained, however, radical and widespread reforms are necessary in the system of taxation and in the administration of the revenue and the expenditures. Italy for a long time has been saddled with a budget that her economic condition has made very hard to bear. Constantly increasing outlays necessitate the continuance of the tax on grain, which was the chief cause of the riots of 1898. The burden of taxation is, on the whole, so badly adjusted as to weigh most heavily on the poorer class. Public opinion in Italy at present strongly demands the abolition of the tax on grains, the lowering of the taxes on other foodstuffs, as well as the reduction of the tax on land in the case of small proprietors; and, above all, demands economy in every department of the government. The Sarraco ministry is pledged to a series of financial reforms, embracing a scheme for the general mitigation of imposts and taxes, the improvement in methods of assessment and collection, the reduction of stamp and registration duties, and the abolition of the tax on manufactured articles. July 1, 1898, the public debt of Italy amounted to 12,270,943,382 lire, and the interest on it in July, 1899, ran up to 590,562,033 lire. In 1898 the savings of the country comprised 1,382,335,205 lire in private banks and 570,324,555 lire in the postal banks; in 1899 there were 1,430,816,003 lire in private banks and 611,673,687 lire in the postal banks.

Production and Industry.—Sixty per cent. of laborers in Italy are engaged in agricultural pursuits. The prevailing systems of land tenure are (1) peasant proprietorship; (2) a form of partnership, including no wages, but based on a division of profits; (3) rent. The principal agricultural products are wheat, maize, oats, barley, rice, hemp and flax, wine, olive oil, and silk. The wheat crop in 1896 was 145,248,840 bushels; in 1897, 86,927,940 bushels, an abnormally small yield, which caused widespread want and brought about the grain riots of the next year; in 1898, 137,359,200 bushels; in 1899, 137,926,800 bushels, and in 1900 (estimated), 119,763,600 bushels. The yield of wine in 1898 amounted to 832,135,500 gallons, and that of olive oil to 60,759,100 gallons. In 1897, 6,428,613 pounds of raw silk were produced. The chief mineral products are sulphur, iron, copper, zinc, and lead. The total value of the ore mined in 1897 was in round numbers 65,000,000 lire, of which more than half represented the value of the sulphur output. The northern provinces of Italy are developing their manufactures rapidly, as is evidenced by the great decrease in the import of manufactured goods, by a corresponding increase in the imports of raw materials and by the growing demand for coal. The development is largely ascribed to the influence of protective tariffs and the spread of technical and commercial education. In 1871 Italy imported 10,500 tons of raw cotton; in 1898 it imported 132,858 tons, of which 93,055 tons came from the United States. Since 1894 the exports of cotton manufactures have exceeded the imports, and a

lively trade is now carried on with Central and South America, Roumania, and Turkey.

Commerce, Navigation, and Railroads.—The chief imports of Italy are grain, cotton, coal, silk, machinery, hides, and tobacco; the exports comprise silk, wine, olive oil, sulphur, and hemp, the value of the silk being generally over one-half of the total value. In 1898 the exports were valued at 1,203,599,304 lire, and the imports, 1,413,339,346 lire. In the first half of 1899 the exports amounted to 624,000,000 lire, and the imports to 718,000,000 lire. The leading countries in respect to Italian trade are Great Britain, Russia, Germany, France, Austria, the United States, and Canada. During the fiscal year ending June 30, 1899, Italy exported \$24,832,746 worth of goods into the United States, consisting mostly of silk, fruit, olive oil, and hemp; and took in return \$25,034,940 worth of grain, cotton, and other substances. In 1899-1900 the imports into the United States were worth \$27,924,176, and the exports, \$33,256,620. In September, 1900, a permanent commission was organized, consisting of experts in trade, to prepare new commercial treaties with foreign Powers, based on the investigations of official documents and the reports of chambers of commerce. Reciprocity treaties are to be made within the next few years with all the great nations of the world. On February 8 Baron Fava and a special commissioner of the United States signed a reciprocity arrangement under the provisions of Section 3 of the Dingley law. July 19 it was proclaimed by the President, and immediately went into effect. In 1899-1900 the merchant marine contained 258 large steamers, with a net tonnage of 278,397, and 1557 large sailing vessels, with a net tonnage of 492,138. For a number of years large subsidies have been granted to ship-builders and navigation companies for the purpose of fostering the merchant navy. In 1893 a law provided for the distribution of 139,000,000 lire in this manner; but the only one to profit by the measure seems to have been the *Navigazione Generale Italiana*, which owns half the steam tonnage of Italy, and charges exorbitant tariffs for the carrying of merchandise. At the end of the year Parliament was considering the advisability of reducing the grants or entirely abolishing the subsidy system. The chief ports of Italy are Genoa, through which nearly one-fourth of the national trade passes; Naples, Leghorn, Messina, Palermo, and Venice. In 1897 there were 9592 miles of railway, of which more than half was owned and operated by the government and the rest conceded to private companies. For 1900-01 the estimated receipts are 284,000,000 lire, of which about 143,000,000 will go to the state. The expenses of the state for the same time, owing to the construction of a new line, will run up to 300,000,000 lire.

Army and Navy.—The army organization consists of a permanent force, a mobile militia, and a territorial militia. Military service is obligatory on all citizens between the ages of 20 and 39. The terms of service range from 2 to 5 years with the standing army, and from 14 to 17 years on "unlimited leave" and in the militia. In April, 1899, the total forces numbered 3,236,161 men. The permanent army consisted of 825,341 men, of whom only 254,887 were with the colors. The strength of the territorial militia was stated at 2,106,233. In December, 1899, the navy consisted of 7 sea-going battle-ships and 3 building, 9 coast-defence battle-ships, 8 armored cruisers and 1 building, 15 protected cruisers and 1 building, 17 torpedo vessels, 5 destroyers and 4 building, 182 torpedo boats and 1 building, and 1 submarine torpedo boat. The average annual expenditure on the war budget for several years is about 240,000,000 lire, and on the navy about 110,000,000 lire. In 1900 it was proposed to undertake the reorganization of the artillery at an expense of 400,000,000 lire in the next 30 years, as well as the construction of new battle-ships; but the plans have met with great opposition in the Chamber and in the country. The necessity of keeping up with her fellows in the Triple Alliance has driven Italy to excessive military outlays. The demand for economy in all branches of government is especially strong in the case of the army and the navy; and it is very probable that this demand will be listened to by the ministry, until the reorganization of the finances and the increase of revenue shall make the annual budget incline more to the credit side.

HISTORY.

Obstruction and Crisis.—The beginning of 1900 found the Pelloux ministry still persistent in pushing the Public Safety bill through the Chamber, and the extreme Left just as determined in obstructing all legislative action. Scandalous scenes were the daily routine in the Chamber, when deputies shouted revolutionary hymns at the top of their voices, keeping time with their inkstands on their desks and finding solace at intervals in hurling vile epithets at the president. On February 22 the first section of the Court of Cassation at Milan struck a severe blow at the ministry in declaring illegal the royal decree of June 22, 1899, providing for the regulation of associations, public meetings, and the press. Such a measure had been laid before the Chamber early in 1899, but had not been acted upon. In embodying it in a decree,

the king, the court declared, had virtually made law what the Chamber had rejected; and the ordinance was, therefore, unconstitutional and void. The majority, nevertheless, set to work on an identical bill; approved on March 2 the spirit, if not the form, of the annulled decree, and proceeded to the discussion of the separate clauses of the new measure. The Left immediately resumed its violent tactics. On March 27 it appointed a commission to agitate throughout the country for the calling of a constitutional convention. The ministry at last determined to adopt a new set of standing rules, which should allow the president to prevent interminable discussion and empower him to expel by military force all members guilty of unseemly conduct. But as the Left would never have permitted such a measure to come to a vote, it was determined to act on the new rules without discussion and by a mere show of hands. To test the strength of the government President Colombo resigned on April 1. The next day he was re-elected by 265 votes to 153, and on April 3 the question of the new procedure was taken up. The extreme Left howled its disapproval, and then seceded in company with the constitutional Left. The orders were voted; but the apparent triumph of the Ministerialists was counterbalanced by a royal decree of April 5, which abrogated the obnoxious decree of June, 1899, a distinct concession to the Radicals. When the Chamber met, on May 15, the Socialists announced their determination to resist the new rules by force, if necessary, and started in to create the usual parliamentary pandemonium. In this crisis the government showed itself weak. President Colombo did not dare to call in the soldiers, though empowered to do so by the rules expressly adopted for such an occasion, and closed the session. The next day the Parliament was prorogued, and on May 18 it was dissolved by a royal decree, which set the elections for June 3, and appointed June 10 as the date for the assembling of the new Parliament. The dissolution of Parliament was a fatal move on the part of the cabinet; for, as events showed, the country was even more hostile to them than the tumultuous Chamber. The Ministerialists came back with strength reduced; the extreme Left returned with numbers increased from 68 to 95, while the Socialists doubled their forces. Many prominent supporters of the government had failed of re-election, among them Signor Colombo. On June 16 Humbert opened the Parliament with a strong speech from the throne, in which he pleaded for harmony and appealed to the patriotism of the deputies. But the Radicals were sullen and unreconciled, and on June 18 the Pelloux ministry went out of office. The king called upon Signor Sarraco, president of the Senate, to form a ministry, and on June 24 the new cabinet was created. Its personnel is given in the paragraph on Government. In character it was moderate Liberal, being composed for the most part of the followers of Pelloux, with two Independents and one member from the Left. On June 27 Sarraco declared that the general purpose of the government would not be to pass police measures for the crushing out of insurrection, but to seek means of doing away with the economic causes of insurrection. The Left was pleased with this, and announced its intention of giving up its policy of obstruction and of working in conjunction with the government. Only a small fraction of the extreme Right under Sonnino went into opposition. On November 14 Sarraco submitted to the new king a detailed outline of proposed ministerial action. It embraced the questions of emigration, of marine subsidies, of administrative, judicial, and financial reforms, of the navy, the army, and the railroads. The minister's remark, however, that these reforms must be carefully weighed and slowly introduced displeased the Radical element, which insisted upon the immediate abolition of all oppressive taxes as the only way of ameliorating the condition of the country.

The Assassination of Humbert.—At Monza, on July 29, 1900, King Humbert had been invited to attend a distribution of prizes at an athletic contest at the Palestra. About ten o'clock in the evening he stepped into his coach, bound for home. A large crowd surrounded the carriage, cheering the monarch, and among them was one who elbowed his way through the multitude, shouting loudly, "*Viva il re.*" He broke through the line of gendarmes, drew a pistol, and fired three times at the king, breaking his arm, wounding him in the neck, and sending a bullet into his brain. "It is nothing," said Humbert, clutching at his heart, and fell back breathless on the seat. The carriage dashed off for the royal villa, reached it in three minutes, but the king had died on the way. Queen Margherita was immediately summoned, and assumed charge of the government until the arrival of the heir, Vittore Emanuele, Prince of Naples, eldest son of the dead monarch. The news of the assassination filled Italy with grief. Business was everywhere suspended, and people in the streets and plazas wept for the death of the good king, *il buono re Umberto*. The Vatican ordered masses to be said for the repose of the king's soul, and one of its bishops sanctioned a prayer composed by Queen Margherita on her husband's death. The premier Sarraco, in an eloquent speech before the Senate, expressed the horror all parties felt at the deed; and the Socialists, while declaring themselves hostile to all monarchy, emphatically asserted their abhorrence of political assassina-

tion. On August 9 Humbert was buried with great solemnity in the Pantheon at Rome. The murderer had been immediately seized by the soldiers, and saved with great difficulty from the maddened populace. He gave his name as Gaetano Bresci, anarchist; said he was a native of Prato, in Tuscany, had emigrated in 1897 to America, where he lived in Paterson, N. J., working in a silk mill there, and had returned to Italy on May 7 with the express intent of killing the king. Investigation in Italy and in America led to the hypothesis that Bresci was a member of an anarchist club, which in February, at a meeting in Milan, had condemned several European rulers to death; but the assassin declared that the act was on his own responsibility, and that he alone was concerned in it. Placed on trial before the Milan tribunal on August 29, he declared that he had killed the king because he considered him responsible for the unhappy condition of the country, that sent men like himself into voluntary exile, and especially because in 1898, in the streets of Palermo and Milan, Humbert had ordered the cannons turned on crowds of men and women crying for bread. Fully acknowledging his crime, he was found guilty of murder and condemned to solitary confinement for life.

Vittore Emmanuele III. re d'Italia.—A new Public Safety bill was introduced into the Chamber, and the police, as is usual on such occasions, did their best to throw the country into an anarchistic terror by arresting all kinds of suspicious characters; but the new king very sensibly refused to be frightened into adopting any oppressive measures. It was held that his advent marked a new period in Italian history, for the reason that he was sure to attempt to play a more important part in the government than did his father. On August 3, however, he issued a proclamation, in which he declared it his intention to adopt the policy of his predecessor, both in internal and external affairs. "I understand my first duty to be," he said, "to follow the counsels he left me, and to imitate the virtues of the king and first citizen of Italy. There remain to us the institutions which he loyally preserved, and which he attempted to render permanent during the twenty-two years of his reign. These institutions are given to me as the sacred traditions of my house, and the warm love which Italians have for them, protected with a firm and energetic hand from assault or any violence from whatever source it comes, assures me. I am certain of the prosperity and grandeur of the country. It was the glory of my grandfathers to have given Italy its unity and independence. It was the glory of my father to have jealously guarded this unity and this independence to the end." The words "any violence from whatever source it comes" were understood to refer to the Vatican, and a large body of the population appeared to approve the continuation of a vigorous policy against the papacy. The king retained the Sarraco ministry, and on August 11 took the oath of fealty to the constitution before the Parliament. His speech from the throne reiterated in great measure the sentiments expressed in his proclamation. He declared that Italy must continue to be a liberal monarchy, with crown and Parliament working in perfect accord. He dwelt upon the army and navy as the strongest guarantees of external peace, and, more than that, as the firmest ties that held Italy united. He pleaded for harmony between political parties, and urged all to forget their differences for the common good of the fatherland. The Parliament received his statements with cheers; and though the revolutionary element remained unreconciled, it postponed action till the course of the king's policy should become more definite. Though his future course was a matter of conjecture, it was taken as a significant fact that the ministerial programme of reform, mentioned in the paragraph Obstruction and Crisis, received his entire approval.

The Crown and the Vatican.—The relations between the government and the Vatican continued hostile through the year. Early in 1900 the Supreme Court of Italy denied the Pope all extraterritorial rights, and declared all inmates of the Vatican subject to Italian jurisdiction. Another source of contention was the question of civil *versus* religious marriages, of which mention has been made under Religion. The death of Humbert seemed for a time about to be followed by a *rapprochement* between state and Church. The Pope permitted mass to be said in the churches and the interment of the body in the Pantheon. But soon, in consequence probably of the new king's energetic proclamation, the old hostility reappeared. The prayer of Queen Margherita for her husband's soul, which had received the sanction of a bishop of the Vatican, was later interdicted by the papal authorities—an act which created great dissatisfaction everywhere. All hopes of conciliation were destroyed by an announcement in the *Osservatore Romano*, a papal organ, that the Vatican would never abandon its undeniable rights. Toward the end of August, Leo XIII. addressed an encyclical to all Catholic Powers, imploring them to rescue the Church and its heads from their intolerable situation, reaffirming the rights of the Pope to Rome and the patrimony of St. Peter, and declaring that he would never acknowledge Victor Emmanuel III. ruler of Italy, but only King of Sardinia. The deadlock between the government and the Church seems, therefore, bound to continue.



KING VICTOR EMMANUEL III. AND QUEEN HELEN, THE PRESENT SOVEREIGNS OF ITALY.

Foreign Affairs. The Triple Alliance.—In Italy there is a constantly growing spirit of opposition to the Triple Alliance. Crispi, in an article in the *Nuova Antologia*, argued for the renewal of the alliance, which ends in 1903, but the Liberal press as a whole denounced it as a pernicious policy for Italy. Circumstances occurring in connection with the celebration at Berlin of the coming of age of the German crown prince tended to confirm the rumors that the alliance was breaking up. While the Austrian Emperor took part in all the ceremonies at the Prussian capital, Humbert was not present, and it was reported that he had not even been invited. The official party in Italy clung to the alliance as the rock of their salvation, but the economic condition of the country is in favor of their opponents. It is pointed out that the alliance has put a far greater burden of expense on the country than it can bear, and that the annual military and naval preparations are far beyond the needs of the country. It is argued that France ought no longer to be feared as an enemy; that, in fact, it has shown itself willing to enter into the most friendly relations; while, on the other hand, the hatred between Italians and Austrians can never pass away, and must remain a perpetual impediment to perfect harmony among the allies. In China Italy has acted in harmony with France. At first the patriotic party advocated the sending of a powerful force to the East, but public opinion demanded moderation, and a contingent of 1200 men was despatched, not really to protect Italian interests in China, for these are minute, but to uphold the position of Italy as one of the great Powers concerned in the spread of civilization and the protection of commerce. Regarding Africa, a message from Captain Accodicola, Italian resident at Adis Abeba, announced the settlement of the boundary between Abyssinia and the Italian possessions. By agreeing to the Mareb-Belesa-Muna line, King Menelek has ceded to Italy the possession of a great part of the Abyssinian plateau.

Signor Rubini, secretary of the treasury, resigned on December 21, and his duties were temporarily assigned to Signor Chimirri, minister of finance. Extensive strikes in the neighborhood of Genoa marked the close of the year. For description of recent archæological exploration, see *ARCHÆOLOGY* (paragraph Italy).

ITO, HIROBUMI, Marquis, Japanese statesman and prime minister since the resignation of the Marquis Yamagata in September, 1900, has been active in the political life of Japan since 1864. A young man of 24, he took part in the negotiations attending the treaty with the four foreign Powers, Great Britain, France, United States, and Holland, which followed the Shimonoseki affair. He became familiar with the political institutions of different countries in the course of a secret journey to Europe, and, convinced of the advantages of European civilization, he has since been a leader in the introduction of Western ideas and methods. In 1871 he came to the United States to make a study of the coinage system, and after his return to Japan was instrumental in establishing the mint at Osaka. Eight years later another period of travel resulted in the development of such decided German proclivities that he has since been called the Bismarck of Japan. In 1886 the Japanese cabinet was reorganized, and the Marquis Ito was given the premiership. A number of the most radical reforms, carried out upon the lines of the German government, characterized his administration, and he was the promoter of the famous constitution of 1889. A conservative reaction brought about his retirement the same year, but in the fall of 1892 he was again made premier.

For ten years previous to the war with China, in 1894, Marquis Ito was at the head of the Yokosha arsenal. On the outbreak of the war he was appointed high-admiral of the Japanese fleet. He was in command in the great naval battle of September 7, 1894, which resulted in the destruction of China's finest warships. The following February Wei-hai-wei together with the Chinese fleet was surrendered to him by the Chinese admiral, Ting. The advantages gained by him for Japan were nullified by Russia, and the premier for this and other reasons is strongly opposed to Russia's aggressive policy in China. His attitude toward the United States is one of great friendliness. Ito was premier again in 1898. In August, 1900, he issued a manifesto which set forth the aims of a new party formed by him and termed the Constitutional Political Association; the purpose of this party is the stricter observation of the constitution of the empire. Receiving the majority vote of the members of the House of Representatives, he was made premier and succeeded in forming a strong ministry.

IVORY COAST, an African colony of France, on the Gulf of Guinea, lies between the republic of Liberia on the west and the British Gold Coast colony on the east. To the north are the military territories of the French Soudan. The estimated area of the Ivory Coast, including the native kingdom of Kong, which is under French protection, is 100,000 square miles, and the population 2,500,000. The colony is administered by a governor. The seat of government is Grand Bassam; other centres of population and trade are Grand Lahou, Assinie, and Elimi. The Ivory Coast has become a self-supporting colony; the local revenue and expenditure for

1899 balanced at 1,290,000 francs. Corn and rice are cultivated by the natives, and coffee culture has been introduced. Rubber and cocoanuts are taken in the forests. The principal exports are rubber, palm oil, mahogany, and gold; this metal is found near Grand Bassam. In 1898 the imports and exports amounted to about \$926,000 and \$965,000 respectively; in 1899, imports, \$1,143,000, and exports, \$1,150,000. A railway some 280 miles in length, from the coast to Kong, is projected, and has already been surveyed.

JACKSON, HENRY MELVILLE, D.D., Protestant Episcopal bishop coadjutor of the diocese of Alabama until a short time before his death, which occurred at Montgomery, May 5, 1900, was born at Leesburg, Va., in July, 1848. He was educated at the Virginia Military Institute and the Virginia Theological Seminary, and in 1874 was ordained priest. From 1876 to 1891 he was rector of Grace Church, Richmond, Va., and in the latter year was consecrated bishop coadjutor of Alabama. For a long time he was editor of *The Southern Pulpit* and subsequently of *The Pulpit Treasury*.

JACKSON, LEONORA, American violinist, was born in Boston in 1880. She received instruction in her art from several great masters, especially Joachim, and won a musical prize over all other competitors. In 1896 she made her début in Berlin, Joachim conducting the orchestra in person. Since then she has played in other German cities, in Paris and London, and made her first appearance in the United States on January 5, 1900, with the Philharmonic Society of New York. See MUSIC.

JACOBINI, Cardinal DOMENICO MARIA, vicar of Rome, died in that city February 1, 1900, at the age of 63 years. He was of humble parentage, but attained especial prominence in the Church, being successively secretary of briefs, viceribarian of the Roman Church, secretary of the Propaganda, and papal nuncio to Portugal. In June, 1896, as a result of his success in deterring King Carlos, of Portugal, from visiting King Humbert at Rome Jacobini was created a cardinal priest. In the fall of 1899 he succeeded Cardinal Parocchi as papal vicar, but on account of illness never took formal possession of the office.

JACOBOWSKI, LUDWIG, German poet and novelist, died December 3, 1900, at the age of 32. After his studies at Berlin and Freiburg he edited the *Gessellschaft*, a publication representing the so-called *moderne* tendency in literature, art and social philosophy. He wrote novels and short stories, a comedy in verse entitled *Dryab der Narr*, which was well received, and delightful lyrics collected under the different titles: *Aus bewegten Stunden* (1899); *Funken* (1890); *Aus Tag und Traum* (1896); *Leuchtende Tage* (1899). Under his direction a cheap edition of popular selections from the German classics has been published, and a collection of songs of the people entitled *Aus deutscher Seele* (1900).

JAMAICA, the largest of the British West Indies, lying 90 miles south of Cuba, comprises, with the Turks and Caicos islands, Morant Cayes, Pedro Cayes, and Cayman islands, a British crown colony. The capital is Kingston.

Area, Population, Education.—Jamaica has a length of 144 miles, an extreme breadth of 49 miles, and a total area of 4200 square miles; the aggregate area of the dependent islands is 224 square miles. The population of Jamaica in 1891 was 639,491; in 1897 it was estimated at 706,394, and in 1900 at 745,104. About three-fourths of the inhabitants are negroes and one-fifth mulattoes. In 1896 the East Indian population numbered about 14,000. The populations of the principal towns are as follows: Kingston, 48,500; Spanish Town, over 5000; Montego Bay, over 4800; Savanna-la-Mar, about 3000; Falmouth, over 2500.

Education seems to be in an unprogressive condition. In the year 1897-98 there were enrolled 98,205 pupils in 913 government schools, and the average attendance was 57,983; in the succeeding year the enrolment was 96,252 in 893 government schools, the average attendance being 56,853. In addition to the government schools there are several high schools and industrial schools and two government institutions for the training of teachers.

Government and Finance.—The colony is administered by a governor (Augustus W. L. Hemming since 1898), appointed by the crown and assisted by a privy council of not more than 8 members, and by a legislative council of 25 members, of whom 5 are ex-officio, 6 nominated, and 14 elected, one from each parish. The majority of the elective members has become nominal, for the nominated members may be increased to 10 whenever the government needs a majority on a question of paramount importance. Such an increase was made in 1899. Each of the 14 parishes is administered by an elective board. Besides a resident magistrate in each parish there are circuit courts and a high court of justice. Besides a militia of about 760 men there were in Jamaica in 1900 about 1740 officers and men of the British army.

Fiscal troubles caused a large amount of legislative friction in the spring of 1899,

and in July of that year Sir David Barbour, member of the council on the sugar-growing colonies of the West Indies, published a report setting forth the financial depression of Jamaica and attributing it to the low prices of the island's produce and to a cessation of labor caused by the completion of a number of large works. For the amelioration of the unhappy financial condition the imperial government included in the appropriations under the Colonial Loans act advances to Jamaica amounting to £453,000, to be applied on the revenue deficit, railway completion, interest on railway debentures, and public works. Pursuant to Sir David Barbour's report, the British colonial secretary, Mr. Joseph Chamberlain, in order to secure necessary revenue, ordered the imposition of an income tax and an increase in the land tax and in stamp duties; and in spite of the discontent of the elective members of the Legislature, he directed the governor of the colony to appoint and keep appointed the full number of nominated legislative members, so that the government might always be sure of a majority on a question of "paramount" importance. The secretary also said that in the future the finances of the colony would be controlled by the Colonial Office. In 1900 there seemed to be little abatement on the part of the elected members of the Legislature in their opposition to the four additional nominated members appointed in 1899, and in the fall of the year a serious agitation for the restoration of the former régime was feared; it was announced in October, however, that the colonial secretary had refused to give any pledge of the withdrawal of these members. Statistics of finance and commerce for fiscal years are as follows:

	Public Debt.	Revenue.	Expenditure.	Imports.	Exports.
1897.....	£1,994,184	£677,064	£766,534	£1,660,667	£1,448,443
1898.....	1,994,184	672,535	796,749	1,814,793	1,662,543
1899.....	1,875,116	600,271	654,461	.....	.....

The revenue for the fiscal year 1900 has been estimated at £620,759 and the expenditure for the fiscal years 1900 and 1901 at £765,286 and £756,991 respectively.

Industries and Commerce.—The leading industries are agricultural and pastoral; in 1898 the total number of acres under cultivation (tillage and pasture) was about 660,000, the acreage given to the principal crops being as follows: Ground provisions, 77,271; sugar-cane, 27,123; bananas, 23,405; coffee, 22,901; cocoanuts, 11,293; and the number of acres under common pasture, guinea grass, and pimento was upward of 495,000. Statistics of foreign commerce are given near the end of the preceding paragraph. In 1898 the leading exports were as follows: Coffee, £162,219; sugar, £150,311; rum, £104,295; dyewoods are also an important export. The imports were: Cotton goods, £254,007; fish, £151,569; flour, £145,639; rice, £35,772. The aggregate entrances and clearances in the foreign trade in 1898 amounted to 1,827,719 tons. Under the system of foreign bounties the sugar industry in the West Indies has declined. More attention, accordingly, is being given to the cultivation of fruit, and the opinion has obtained in England that the establishment of additional steamship service between that country and Jamaica would be a valuable help to this industry. Public sentiment in Jamaica, however, seemed in 1900 to favor the development of trade with the United States, and early in the year the colony rejected the plan of the British Colonial Office for subsidizing a line of fruit steamers plying directly between Jamaica and England. The reported length of railway is 185 miles; telegraph lines, 635 miles, and telephone lines, 150 miles. On August 15, 1900, the government took over possession of the railway and assets from the bondholders. The line will be operated in the interests of the island, special effort being made to promote the fruit trade.

On December 16 and 17, 1900, serious race riots occurred in Kingston, and further trouble was feared. The principal rioters appear to have been negro soldiers of the British service. Race riots took place in Kingston in 1894 and 1897, and in 1898 the Maroons, the former Spanish slaves, rebelled against the government, but were quickly repressed.

The Turks and Caicos islands, which have a population of about 5000, are administered by a commissioner, assisted by a legislative board. The only industry of importance is salt-raking, the annual production being about 2,000,000 bushels. The total exports in 1898 and 1899 amounted to about £24,800 and £31,910 respectively. Cocoanuts and turtle-grass are exported from the Cayman islands.

JAPAN, THE EMPIRE OF, consists of the five principal islands of Honshin, Kinshin, Shikoku, Hokkaido, and Formosa, and many small islands, supposed to number 4000. The total area (including Formosa and the Pescadores), according to official figures published at the end of 1898, was 161,198 square miles. The population at the end of the same year was given as 46,540,754, showing an increase of about 500,000 over 1897. The foreign population of Japan in 1898 was 11,589, and was made up of 6130 Chinese, 2247 English, and 1165 Americans, while the number of

Japanese abroad at the same period was given as 70,801, of which 43,707 lived in the United States. The population of the principal cities of Japan at the end of 1898 was as follows: Tokio, 1,440,120; Osaka, 821,235; Kyoto, 353,139. There were in 1898, 78 towns with a population of over 20,000.

Production and Industry.—Owing to the remarkable industrial development of Japan in the last few years the domestic supply of foodstuffs has become inadequate for its rapidly growing industrial population; and in spite of the fact that agriculture is carried on on an extensive scale, as can be seen from the increasing importation of artificial fertilizers and agricultural machinery, the imports of foodstuffs for 1899 show a considerable increase over 1898, and the cost of living is becoming higher and higher. The principal agricultural product is rice, and the crop of 1899 was considerably lower than the unprecedented crop of 1898. The total production of rice for 1899 amounted to 39,500,000 koku (koku equals 4,9629 bushels), against 47,388,000 koku in 1898. The production of other cereals in 1899 amounted to 19,338,000 koku, as compared with 20,462,000 koku in the preceding year. The imports of artificial fertilizers increased from 5,490,000 yen in 1898 to 7,923,000 yen in 1899. Besides rice, there are cultivated tea, cotton, tobacco, wheat, barley, oats, sugar-cane, indigo, and corn, as well as different kinds of fruits and vegetables. Agriculture in Japan is carried on by modern methods, and is considerably facilitated by a perfect system of irrigation, improved machinery, and artificial fertilizers. The live stock of the empire in 1897 consisted of 1,406,984 cattle and 1,592,871 mules and horses. Among the industries of Japan the most important is that connected with the culture and manufacture of silk. The export of raw silk increased from 42,047,411 yen in 1898 to 62,627,720 yen in 1899. According to an official report, the number of spindles in operation in 1899 was 1,358,125. There were in 1898, 7366 industrial establishments, in 2968 of which machinery was used. Of the total number, 638 establishments, employing 274,000 hands, were manufacturing for export trade, while the rest, with 140,000 hands, produced mainly for domestic consumption. The best evidence of Japan's remarkable development is furnished by the astonishing increase in the use of electricity. According to the latest reports, there were no less than 400 electric plants in operation, of which about 100 were operated by water-power and the rest by steam. Of the total number, 285 plants are furnishing electricity for lighting purposes, 14 for power, 76 for light and power, and the rest for traction. The iron industry of Japan is developing at an astonishing rate. The government shops at Kobe turn out not only cars for the government railway lines, but also locomotives at a cost which is considerably lower than in the case of those imported from abroad. The shops of the Sanyo Railway Company also manufacture locomotives and cars; and there are 3 car-shops at Tokio and 2 at Nagoya, besides 1 recently opened at Osaka, with a capital of 1,000,000 yen. The newly opened government steel mills at Yamatamma will have an annual capacity of 90,000 tons, including 35,000 tons of rails and 15,000 tons of armor plate. The mineral industry of Japan is mostly confined to coal, copper, and petroleum, although many other minerals are found in abundance. The principal coal mines of Japan are located in the northwestern part of Kinshin, where about 200 mines are worked. The coal industry is mostly prosecuted on a very small scale, owing to the comparative cheapness of labor and of water transportation, and there are found coal-mining concerns with a capital of only 20,000 yen. The output of petroleum for 1897 amounted to 9,249,000 kwans (kwan equals 8.28 pounds), while in 1892 it was only 538,000 kwans; the imports of petroleum at the same time increased from 3,328,000 yen in 1892 to 7,919,000 yen in 1899. The output of copper is also increasing; and the export of that metal for 1899 amounted to 11,313,636 yen, against 7,106,491 yen in the preceding year. The output of pig iron is comparatively insignificant, and this material is for the most part imported from China. The sea fisheries of Japan are also very important, and dried fish constitutes an important item of export.

Commerce.—The foreign commerce of Japan for 1899 presents additional proof of the remarkable industrial growth of the empire. While the aggregate foreign trade does not indicate any marked change, and, in fact, shows a slight decrease from 1898, the significant fact is that the imports for 1899 decreased from 277,502,000 yen in 1898 to 220,401,925 yen in 1899, while the exports increased from 165,753,752 yen to 214,929,894. But the significance of the fact becomes still more apparent when we examine the changes in the character of the imports. The following table gives the imports in yen by principal groups for the last three years:

	1899.	1898.	1897.
Foodstuffs	35,721,709	86,844,062	49,221,662
Raw and partly finished products.....	93,891,979	77,585,398	72,938,747
Finished metal products.....	8,641,178	19,818,363	24,156,786

An examination of the preceding table will show that while the imports of raw products used in industries increased by over 16,000,000 yen, the imports of machinery

and finished metal products show a considerable decrease. It is true that the decrease in the imports is partly due to the change in the tariff, but it cannot be denied that the falling off in the imports of finished metal products, which include mostly materials for railways, is the result of the development of the iron industry, such as the manufacture of cars, locomotives, and rails in Japan. The remarkable decrease in the imports of foodstuffs is due mainly to the unprecedented rice crop in 1898 and to the excessive imports of sugar during that year. The greatest increase in raw materials is shown in the case of raw cotton, which increased from 45,744,371 yen in 1898 to 62,210,715 yen in 1899. Considering the foreign trade of Japan by countries, a considerable increase in the trade with the United States is noticed and a decrease in the case of Great Britain and Germany. The following table gives the trade in yen with the countries of greatest commercial importance for the years 1898 and 1899:

	Exports.		Imports.	
	1899.	1898.	1899.	1898.
United States.....	63,919,270	47,311,154	38,215,894	40,001,097
China.....	40,357,084	39,198,175	28,687,730	30,523,860
Great Britain.....	11,370,770	7,783,643	44,896,998	68,707,572
British India.....	6,062,049	6,134,449	43,853,885	40,764,244
Hong-Kong.....	34,891,307	31,473,985	7,398,454	15,904,466
France.....	29,947,837	20,486,406	5,768,180	6,970,082
Germany.....	3,796,927	2,469,241	17,613,191	25,610,961
Russia.....	3,163,604	2,642,574	4,584,119	1,694,109

It will be seen from the preceding table that while the trade of the United States with Japan has largely increased, the increase is in the export trade, while the imports from the United States show a slight decrease as compared with 1898. The same is true of Great Britain, Germany, France, and Hong Kong. The articles of export which show the greatest increase are rice, 10,282,011 yen in 1899, against 5,920,185 yen in 1898; copper, 11,313,636 and 7,106,491 yen respectively; and raw silk, 62,627,720 yen, against 42,047,411 yen in the preceding year.

Trade with the United States.—Official figures recently published by the Treasury Department for the trade between the United States and Japan during the calendar year 1900 show that while our aggregate trade with Japan has decreased from \$54,808,361 in 1899 to \$52,807,346 in 1900, our imports from that country have decreased from \$34,203,587 to \$26,315,235, while our exports to Japan have increased from \$20,604,774 to \$26,492,111. The principal articles of import from Japan are raw and manufactured silk and tea. The total value of raw silk imported in 1900 shows a decrease of over \$8,000,000 (\$20,927,890 in 1899, and \$12,390,780 in 1900); manufactured silk has also fallen off from \$3,246,743 to \$2,998,851, while the imports of tea have increased from \$4,488,958 to \$4,688,307. United States exports to Japan consist chiefly of foodstuffs, raw cotton, tobacco, oils, and scientific instruments. The demand for American raw cotton appears to increase steadily. The total value of raw cotton exported to Japan for the last three years was \$5,839,708, \$8,849,117, and \$9,073,005 respectively. The same is true of the export of oils, which amounted to \$5,334,837 in 1900 against \$3,460,240 in 1899. The export of breadstuffs also shows an increase, while the export of tobacco has fallen off from \$1,970,829 to \$238,664. The demand for pig iron shows a remarkable increase from \$164,286 in 1899 to \$1,567,799 in 1900. It will be seen that the greatest increase in United States exports to Japan is shown in the case of foodstuffs and raw materials used for industrial purposes, while the export of finished products and machinery is either stationary or shows an insignificant increase. Thus, it may be safe to presume from present indications that American exports to Japan will consist largely of foodstuffs and raw materials. As to finished products, the time seems not far off when Japan will be able not only to supply her own domestic needs, but also to compete for the trade in the Far East.

Shipping.—The shipping for 1899 shows a considerable increase over 1898, both in the number of vessels and in tonnage. The number of steamers entered during 1899 was 2240, with a tonnage of 3,439,666, and the number of sailing vessels, 1163, with a tonnage of 168,828. The number of vessels cleared during the same year included 2324 steamers, with a tonnage of 3,584,114, and 1225 sailing vessels, with a tonnage of 193,602. The principal ports of Japan are Osaka, Otaru, Kobe, Tokio, and Yokohama. The merchant marine of the empire consisted in 1899 of 723 steamers, with a tonnage of 489,371, and 2556 sailing vessels, with a tonnage of 256,896.

Finance.—The budget for 1900 gives the total revenue as 246,953,075 yen, against

217,157,131 yen for 1899. The expenditures as given in the budget are 246,451,707 yen, against 219,452,427 yen in 1899. The revenue is derived chiefly from land tax, tax on *sake*, custom duties, state domains, and Chinese indemnity. A comparison of the ordinary revenue as given in the budgets for 1899 and for 1900 shows an increase in land tax from 38,399,195 yen to 45,874,140 yen; tax on *sake* from 32,806,764 to 49,097,875 yen; custom duties from 9,092,592 to 16,716,382 yen, and state domains from 25,399,663 to 37,655,695 yen. The extraordinary revenue, on the contrary, shows a decrease from 84,588,696 to 68,394,131 yen. This decrease is due to a reduction in the loans of about 9,000,000 yen and in the Chinese indemnity of nearly 15,000,000 yen. The principal items of ordinary expenditure are interest on public debt, 33,398,763; ministry of finance, 10,667,795 yen, against 8,980,977 in 1899; ministry of war, 37,040,840 against 32,515,155 yen in 1899; ministry of marine, 15,123,167 yen, against 11,191,405 in 1899, and ministry of communications, 15,252,410 yen. The extraordinary expenditures include 18,539,415 yen for the ministry of war, 36,044,497 for the ministry of marine, and 25,518,490 yen for the ministry of communications, against 9,388,124 yen in the preceding year. The public debt of Japan at the end of 1899 amounted to 418,365,399 yen, as compared with 428,241,302 yen at the end of 1898. The greater part of the debt is at 5 per cent. The adoption of the gold standard has proved very beneficial to the commercial interests of Japan in giving to government bonds an international value. According to the report of the director of the mint for the fiscal year 1899, the total value of gold coined since the adoption of the gold standard (October 1, 1897) was 115,194,600 yen. The net profits realized during that period amounted to 6,681,319 yen, against 12,152,444 yen during the 27 years preceding the introduction of the gold standard. The profits of the mint are used to cover the losses resulting from the adoption of the gold standard.

The total coinage emitted from the mint of Japan from 1870 to 1899 amounted to 407,719,836 yen, and consisted of 167,978,074 yen in gold coin, 220,746,129 yen in silver, 7,887,753 yen in nickel and 11,107,880 yen in copper. The paper currency at the end of the fiscal year 1899 consisted of 1,632,818 yen of national bank-notes and 179,769,782 yen of Bank of Japan notes, exchangeable for gold or silver on presentation. Thus, the total paper currency at the end of 1899 amounted to 186,514,865 yen, against 200,516,514 yen at the end of the fiscal year 1898. The actual currency in circulation at the end of the calendar year 1899 amounted to about 314,000,000 yen, or less than 7 yen per capita. The industrial and commercial development of Japan can be best seen from the rapid development of banking facilities. In 1896 there were 1340 banking institutions, with an aggregate capital of 245,134,544 yen; in 1897 the number increased to 1603, with a capital of 321,593,014 yen; in 1898 they numbered 1807, with a capital of 384,876,334 yen, while in 1899 they reached the number of 2032, with an aggregate capital of 438,189,469 yen. The postal savings banks of the country at the end of the fiscal year 1899 numbered 4334, with 1,255,589 depositors and deposits amounting to 22,490,918 yen. The private savings banks had 2,327,642 depositors and 30,042,074 yen deposits.

Religion and Instruction.—Religious freedom in Japan is secured by the constitution, and no particular religion or creed receives any support from the state. The predominating religions are Shintoism and Buddhism, but the Greek and Roman Catholic and Protestant churches have also their adherents. Education in Japan is compulsory, but not free. The total number of educational institutions at the end of 1897 was 28,805, with 89,094 teachers and 4,180,211 pupils, while the total school population at the same period was 7,730,441. Among the educational institutions there were 26,860 elementary schools, with 79,299 teachers and 3,994,826 pupils; 159 middle schools, with 53,691 pupils; 272 technical schools, with 2589 instructors and 36,614 students, and 223 kindergartens, with 19,781 pupils. The two imperial universities of Tokio and Kyoto had 2700 and 217 students, respectively, in 1900. The universities are supported by the government, while most of the schools are partly supported by the government and partly by local taxation. The total expenditures on education in 1897-98 amounted to 18,669,049 yen. The value of property belonging to the schools was estimated at 5,477,993 yen. There were in 1897, 31 libraries, with 460,785 Chinese and Japanese and 50,076 European books.

Railways, Posts, and Telegraphs.—The general progress of the empire has also manifested itself in the rapid development of the means of communication. A comparison of the railway statistics for the fiscal year of 1900 and of 1899 shows an increase of 64 miles in the state railways and of 150 miles in the private lines. The total length of railway lines in operation at the end of the fiscal year 1900 was over 3634 miles, while the length of the lines in course of construction amounted to nearly 2000 miles. The number of passengers carried by both state and private lines was 65,107,898 in 1897, 84,453,362 in 1898, and 98,582,117 in 1899. The total amount of freight carried during the corresponding years was 6,697,671, 8,688,388, and 10,018,542 tons respectively. The total receipts for 1899 amounted to 32,985,200 yen, against 27,831,955 yen in 1898. The expenditures for 1899 were 18,402,704 yen,

leaving a net profit of 4,800,712 yen on the state railways, and 9,781,784 yen on private lines. There were at the end of the fiscal year 1899, 4336 post-offices, at which 498,598,108 letters and postal cards were posted during the year. The total revenue and expenditures from the posts and telegraphs amounted to 11,025,492 and 8,133,699 yen respectively. The length of telegraph lines in 1899 was 12,922 miles, and the number of telegrams delivered during the year, 15,342,535, against 13,979,872 in 1898, and 10,857,683 in 1897. The telephone lines at the end of 1899 had a total length of 1562 miles, with 13 exchanges and 40 calling offices. There were in 1899, 3406 money-order offices, in which 6,338,469 orders were issued, representing a sum of 56,201,432 yen.

Army and Navy.—The army of Japan is under the command of the emperor, and is organized and conducted on modern lines. Military service is compulsory for every male subject between the ages of 17 and 40, and the term of service is 3 years in the army and 4 years in the navy. The armed forces of the empire at the end of 1898 consisted of 125,342 officers and men in active service and 282,621 in reserve, making a total of 407,963, including 8457 officers. All the arms and ammunition in use by the Japanese army are manufactured in the arsenals of Tokio and Osaka. The navy of the empire is also under the supreme command of the emperor, and compares favorably with those of many European Powers. The effective naval force of Japan at the end of the calendar year 1900 consisted of 4 first-class battle-ships and 1 of the third class; 1 battle-ship for coast defence, 14 cruisers, 1 gunboat, 12 torpedo-boat destroyers, and 29 first-class torpedo boats. There were also in the process of construction 2 first-class battle-ships, 8 cruisers, 1 gunboat, 8 torpedo-boat destroyers, and 32 torpedo boats. The personnel of the navy at the end of 1898 numbered 24,779 officers and men, against 13,685 in 1897.

Government.—The form of government of Japan is to a certain extent that of a constitutional monarchy. In accordance with the constitution adopted in 1889, the emperor exercises the executive power with the assistance of a responsible ministry and a privy council, and the legislative power with the consent of the imperial Diet, which consists of the House of Peers and the House of Representatives. The membership of the former consists of male members of the imperial family, representatives of the different orders of nobility above the age of 25, and persons above the age of 30, nominated by the emperor for special services, or elected by their respective *Fu* or *Ken*. The entire membership of the Upper House is about 300. The House of Representatives also has 300 members, elected by their respective districts for a term of 4 years. The qualifications of electors are: Age above 25, residence in the *Fu* or *Ken* for not less than 1 year and the payment of direct national taxes of not less than 15 yen for 1 year in the *Fu* or *Ken*. For local government the empire (with the exception of Hokkaido and Formosa) is divided into prefectures (*Fu* and *Ken*), which are subdivided into municipalities and counties. Every prefecture is administered by a governor and two chambers. The counties and municipalities are administered in the same way, except that the former have a sheriff and the latter a mayor at the head of the administration. The governor and the sheriff are appointed by the government, while the mayor and the chief magistrate of a town or village are elected by the people and approved by the emperor and the governor respectively. The administration of Hokkaido is organized on different lines, while Formosa is administered by a governor-general, appointed by the government and invested with very extensive powers.

HISTORY.

Native Religion and Christianity.—In 1900 a bill was introduced into the imperial Diet, establishing the political equality of Christians and Buddhists, guaranteeing freedom of religion and protection to all inhabitants, and exempting church property from taxation. The bill was supported by Christians and liberal Buddhists, but was vehemently opposed by the conservative priesthood, who brought about its rejection in the House of Peers. Both the bringing forward of the proposal and its failure served to illustrate religious conditions in the country during the past year. With remarkable readiness the inhabitants have assimilated Western science and that branch of Western thought which is nearest allied to science, the utilitarian philosophy. Herbert Spencer is very popular in the island empire and dominates speculation there. As a result the enlightened Japanese have Occidental civilization, but not much Occidental religion, or any religion at all; for, as a rule, those who have given up Buddhism and Shintoism have become agnostics and sceptics. Essentially the people are not firm believers, and lend themselves to conversion with encouraging facility if not with perfect faith. They are influenced in their beliefs by practical reasons. Their progressive leaders adopted Christianity or tolerated it and studied it because it came hand in hand with that modern culture which, materially, has regenerated their country, but into the spiritual life of the West they really did not enter. They adopted the European army and navy, the railroad and

telegraph, but displayed no remarkable zeal for the European church or meeting-house. The reporter in Japan is immensely more popular than the missionary. Of late, too, the cost of being a Power has begun to be felt, and with dissatisfaction have come doubts of the benefits of imported civilization and theology, a state of mind which found expression in the rejection of the bill mentioned above. Christianity in Japan has not attained the splendid fulfilment that formerly seemed to await it; according to good authorities, in fact, is actually retrograding. In 1900 there were 120,913 Christians in the country, less than one-third of 1 per cent. of the population, and of this number very many were Christians in name only; for they have refined dogma into a mystical idealism that reaches back to Buddha, or have materialized the Deity into power, force, energy. The sceptical mind of the Japanese has studied the behavior of the Christian Powers in the East, and has made a case against Christianity. In the *Orient*, a magazine published by Japanese in English, a writer pointed out that Japan's position among the nations was not won by her progress in civilization, but by her victory over China in 1894-95. "The principles of the Sermon on the Mount," he says, "are the most important in the so-called Christian code of morality, and these precepts are unquestionably against war and against according honor to any nation or any man on the mere ground of success in the exercise of brute force. And yet it has been precisely on these grounds that non-Christian Japan has been accorded the respect of so-called Christian Europe and America. The present situation is puzzling to us benighted heathens of Japan who have won the respect of those who profess to follow the precepts of Christ on the Mount by success in slaughtering our enemies. Will real Christians explain what it all means?"

The Courts.—Great dissatisfaction was felt during the year by foreigners with the new treaties which placed them under the jurisdiction of the native courts. The judicial system of Japan, in spite of many recent innovations, is still Oriental in its methods of examination and trial. The procedure is mostly secret and intimidation is a favorite method of eliciting incriminating evidence from the defendant in a criminal suit. The personnel of the judiciary is low, men of talent refusing to serve for the miserable pittance a judge receives. In part the fault is that of the government, which appropriates annually less than \$2,500,000 for administering justice among 45,000,000 people.

Foreign Affairs—Japan and China.—To seize a share of the Chinese trade Japan made strenuous efforts in 1900 by continuing the policy of subsidies to build up fleets of merchant vessels. At present her part in Chinese commerce is not considerable. The plans proposed involved the creation of a line of steamships between Japan and Shanghai, another line between Shanghai and Hong Kong, and a flotilla of light boats for the exploitation of the basin of the Yang-tse-kiang. A society for the investigation of Chinese commercial affairs was success in 1900 gathering statistics and studying possible openings for Japanese enterprise. Graduate students from technological and commercial schools were sent to China to acquire practical knowledge there. On June 6 Premier Yamagata resigned, but consented to resume office on June 20, when events in China necessitated his presence at the head of foreign affairs. Of Japan's conduct as one of the allies, details will be found under CHINESE EMPIRE. At home, opinion was unanimous that it was the duty of Japan to aid in restoring order in China, and that this was rendered imperative by the total debility of the Chinese government. The proposition which at first found so much favor in England and Russia that Japan should be made the agent of all the Powers for the pacification of China was not warmly entertained by Japan, which felt unable to assume a task of such proportions. Later in the year, when the question of the punishment of China had come up, the Japanese press favored the preservation of the empire, the payment of an indemnity, and the demand of guarantees for the future. In September the Yamagata ministry resigned and a new cabinet was formed by Marquis Ito. The new ministry continued the foreign policy of Yamagata, who stood for the preservation of the integrity of China and friendship with England. The composition of the Ito cabinet was: Premier, Marquis Ito (*q.r.*): minister of foreign affairs, Tokaaki Kato; minister of interior, Suyematsu; minister of war, Katsura; minister of navy, Yamalato; minister of finance, Watanobe; minister of justice, Kaneko; minister of instruction, Matsuda; minister of communication, Hoshi; minister of agriculture and commerce, Hoyashi. Later in the year Hoshi, being accused of peculation, resigned and was succeeded by Hara, and Katsura was succeeded by Koneluma.

The Question of Corea.—Rumors of war between Japan and Russia over the possession of Corea continued throughout the year, and for a time in May, when Russia had succeeded in grasping Masampho, on the Japan Strait (see COREA), matters were undoubtedly near a crisis. As is often stated, especially in this country, war between the two Powers seems inevitable, and its outbreak a question of only a very short time, to be exact, the time required for the completion of the Siberian



MUTSU HITO, EMPEROR OF JAPAN.

Railway. It was pointed out repeatedly during the year that the possession of Corea was indispensable to Japan, whose overcrowded islands required an outlet for their teeming population, increasing at nearly half a million a year. Left to itself Japan could undoubtedly effect a peaceful conquest of the peninsula, since at present it controls the coasting trade of the country and enjoys valuable concessions there. Most important of these is the railway franchise, obtained in 1895, providing for the construction of a road from Seoul to Fusan, on the Japan Strait, 295 miles long and estimated to cost \$12,000,000. The road, passing through the heart of Corea, would have brought the country under Japanese control in a very few years. But Russian influence was said to have interfered, and in 1900 Japan's term for building was almost up without the least beginning having been made. In 1900 the legislature petitioned the government to guarantee the stock of the company, and the Korean railroad was made a patriotic issue. Little hope, however, was entertained by the less sanguine that the scheme would ever be carried out owing to Russian opposition. It is upon the conflict in interest between the Powers, now so apparent, that predictions of an unavoidable war are based. Conditions favoring hostilities in 1900 were the resentment felt by the Japanese at Russia's action in robbing them of their fruits of victory in 1895, the consciousness of their superior strength in the East, and the knowledge that their superiority must disappear with the completion of the Siberian Railway and the consequent marshalling of Russian hordes on the Korean frontier. The influences favoring peace were the reluctance of Japan's statesmen to plunge into a war that must necessarily be long and costly, the imperfect mobilization of fleet and army, which were in process of reorganization, and the fact that Japan's firmest friend, Great Britain, was in no position to render her active or even moral aid, owing to the fighting in South Africa.

JAVA, the principal island of the Dutch East Indies (*q.v.*), situated east of Sumatra and south of Borneo, covers, together with the adjacent small island of Madura, an area of 50,554 square miles. Its population in 1897 was 26,125,053, and included about 52,000 Europeans, largely of Dutch origin, about 250,000 Chinese, and 17,000 Arabs. The native population is Malaysian. The principal occupation of the natives is agriculture, and the most important products are coffee, cinchona, sugar, tea, indigo, and tobacco. The old system of cultivating coffee by forced labor is gradually declining, and the amount of coffee raised on the government plantations in 1898 was considerably less than in the preceding year. The agricultural returns for 1898 were as follows: Coffee on government lands, 12,429,200 pounds, against 64,037,400 pounds in 1897; on lands on emphyteusis, 23,102,100 pounds; on private lands, 7,700,700 pounds. The total product of sugar was nearly 780,000 tons; tobacco, 18,224,135 kilogrammes; tea, 4,757,168 kilogrammes; indigo, 1,094,225 kilogrammes; and cacao, 830,763 kilogrammes. The official returns for the commerce of Java during 1898 show a decrease in the imports and an increase in the exports. The former amounted to 112,487,109 guilders and the latter to 135,169,526. The principal articles of export in 1899 were: Coffee, on the government account, 9092 tons, and on private account, 36,919 tons, against 19,074 in 1898; rice, 46,129 tons; tobacco, 29,724 tons; tea, 5716 tons; indigo, 675 tons; sugar, 777,301 tons, against 689,537 in 1898; and tin from the government mines, 10,534 tons, and from private, 5769 tons. The principal articles of import are textiles, metals, wine, machinery, and powder. The merchant marine of the island consists of 1365 vessels, with a tonnage of 54,905. The revenue is derived from personal taxes, taxes on industries, hut taxes, land taxes, and from the sale of the products of the government plantations and mines. The direct taxes for 1898 amounted to 5,820,084 guilders, and the tax on native lands, 17,881,000 guilders. The total length of the railway lines of Java at the end of 1898 was 1075 miles, against 1002 miles in 1897. Most of the lines of the island are controlled by the government, and the receipts for 1898 amounted to 13,364,000 guilders. The number of postal-telegraph offices at the end of 1898 was 348, of which only 41 belonged to private companies. The educational institutions of the island in 1898 comprised 223 government schools, with 43,094 pupils, 140 subsidized schools with 17,192 pupils, and 76 private schools with 6603 pupils. For secondary education there is a gymnasium in Batavia with 234 pupils and 27 teachers. There were besides 246 schools for Chinese with 4834 pupils, and 62 for Arabs with 993 pupils. For administrative purposes the islands of Java and Madura are divided into 22 provinces, each governed by a resident, assisted by several assistant residents and *controleurs*, all of whom are under the control of the governor-general for the East Indies. The government is highly centralized, and the budget for every province and town is made up by the governor-general or under his supervision. The "culture system," which consisted in compelling the native population to give a part of their time or land to the cultivation of products for the government, or to sell the products of their plantations to the government at a fixed price considerably below the market value of the products, is gradually being discarded on account of its wastefulness. The practice

of buying the products of the natives by the government has entirely disappeared in several provinces, and the cultivation of the government lands by forced labor, which has lately been confined only to the production of coffee, is also declining and giving way to private cultivation.

JEWISH WOMEN, COUNCIL OF, an association of Jewish women, organized in 1893, had in 1900 a membership of 6000. The purposes of the association are "to bring about closer relations among Jewish women, to furnish by an organic union a medium of communication and a means of prosecuting work of common interest, and to foster united efforts in behalf of Judaism by supplying means of study, and in the work of social reform by the application of the best philanthropic thought." General meeting for 1900 at Cleveland, O. President, Mrs. Hannah G. Solomon; secretary, Miss Sadie American, 37 West Seventy-fourth Street, New York City. First annual executive meeting to be held in New Orleans, February 17-21, 1901.

JEWS. According to the *American Jewish Year Book* for 1900-01, the total Jewish population in all parts of the world was 11,723,947 for the year 1900, against 10,728,491 in the previous year, while the *Jewish Year Book* of London places the total number at 11,210,415. These latter were distributed as follows, according to the English reference book: Europe, 9,282,615; Asia, 363,000; Africa, 403,000; America, 1,145,000; Australasia, 16,800. The American manual gives the total Jewish population of the United States as 1,058,135, of which New York State is credited with 400,000, and Illinois and Pennsylvania with over 100,000 each. The number of places of worship in the United States is 570; the number of ministers, 301, and the number of families estimated at 211,627. The numerical gain was 14,335, the total being 1,043,800 in 1899.

Reformed and Orthodox Jews.—The questions of reform which have for some years past been agitating the Jewish religious bodies and threatening at times to disrupt the unity of Judaism are now, from all evidences, coming to a more peaceful settlement. The defiant attitude, such as the proclamation of a famous New York rabbi that God speaks through him as certainly as He did through Moses, and that, accordingly, he could declare for Sunday worship and other radical changes, is now giving way to a rather apologetic tone. Thus, the *Union Libérale Israélite*, lately formed in France, and Mr. C. G. Montefiore, in the *Jewish Quarterly Review*, July, 1900, declare for clinging to the essential traditions of Judaism, and try to excuse the change to Sunday worship on the ground of the impossibility of having the members come to the synagogue on Saturdays, owing to the present system of living among Christian nations, although the Sabbath still remains the Sabbath. On this point Mr. Israel Zangwill, speaking at the Zionist Congress, declared that emigration to Palestine in a body is the only way of making it possible to observe Saturday.

During the year 1900 the advocates of the abolition of Jewish disabilities had a good chance to support their contentions. The Transvaal War has brought the names of Major-General Symons and many lesser officers into prominence before the public. Hardly a week passed that the *Jewish Chronicle* did not add to the roll of honor the names of several Jewish officers who distinguished themselves in South Africa. In the late elections (1895) in England 7 Conservatives and 1 Liberal of Jewish nationality were elected, as against 7 Liberals and 3 Conservatives in 1880. A discussion in the press made it clear that although a distinct leaning to Conservatism is lately noticeable among the Jews, their votes are cast purely on party lines, and there is no such thing as "a Jewish vote," which would naturally provoke antipathy from the party opposite to the one with which they would ally themselves. In Russia the severities against the Jews have been somewhat lessened, the rigidity of the pale of settlement having been somewhat relaxed. Several decisions of the Ruling Senate were passed in favor of individual Jews, and on September 1 the Commercial School at Warsaw was permitted to admit 40 per cent. of Jewish pupils. However, serious anti-Jewish outbreaks occurred in Odessa on July 29, when soldiers embarking for China attacked the Jewish quarters; there were disorders also in the government of Kovno, and Jewish shops had to close in Shavli in anticipation of imminent troubles of a similar nature during the same months. In Roumania the governmental measures against the Jews were little else than atrocities. With the removal of the few rights they still possessed, with the government forbidding the slaughter of cattle according to Jewish ritual, the minister of education, Dr. Istari, prohibiting Hebrew to be taught in Jewish schools for more than three hours a week, and almost all the private life of the Jews being in a similar manner intruded upon by the police, the Roumanian Jews were put into a plight more miserable than anything they had yet experienced. Many thousands of them had to leave their country in great haste, without time to adjust their personal affairs, and in many cases selling their property to the first bidder. The emigration was carried on without a plan and without any aim but to escape the arm of the officials; and in a few months Australasia, Anatolia, London, Canada, and the United States received

many of these homeless exiles without means of livelihood, hungry, and actually in rags. The Baron de Hirsch fund of the United States cared for most of them, and a collection of \$400 was made at the Zionist Congress to help the distressed in London. In Germany anti-Jewish riots took place in Konitz and surrounding districts in West Prussia as a result of charges of ritual murder against the Jews in April and May, and similar accusations were brought against them at Nachod, Bohemia. See ROUMANIA.

In view of the many accusations brought against the Jews in 1900 by European, and especially Austrian, anti-Semites for "ritual murder—that is, human sacrifice as a Jewish ceremonial—the criminal case that was brought to a close on November 14 at Pisek, in Bohemia, is of particular interest. Leopold Hilsner, a young Jew, was convicted and sentenced to death for complicity with some unknown person or persons in the murder of two Christian girls. Ritual murder was alleged, but there was no evidence that the real motive of the crime was due to anything but "the moral perversity of its perpetrator or perpetrators." It appeared that with intelligent and impartial observers in Austria the result of the trial went far to destroy the hideous suspicion against the Jews and their religion. In France the hostile attitude of the Jesuits toward the Jews, and their continued moral and financial support of the anti-Jewish press, were quite evident during the year; but a writer in the *Nineteenth Century* (January, 1900) explains this position simply as a retaliation for the prominent part so many Jews had played in the anti-Jesuit agitation which finally resulted in their expulsion from France. This state of affairs in several countries naturally keeps the so-called Jewish question alive.

The *Zionist Congress* deserves especial mention as being one of several attempts to solve this question. The congress met in London in the month of August, opening on the 13th. About 500 delegates from all parts of the world were present. These represented several thousand Zionist societies, of which England had 38, against 16 in 1899; Russia, 1034, against 877 in 1899, and the United States, 135, against 131 in 1899. The balance-sheet presented at the Congress had in the item "cash in hand" the sum of \$86,124.88. Among those who took part in the proceedings of the congress were the following well-known persons: Dr. Theodor Herzl, Dr. Max Nordau, Israel Zangwill, Sir Francis Montefiore, Dr. Moses Gaster, chief rabbi of the Spanish and Portuguese congregations of Great Britain; Herr Wolfsohn, chairman of the Jewish Colonial Trust; Professor Mandelstamm, of the University of Kieff; Dr. Alexander Marmorek, of the Pasteur Institute, and Professor Richard Gottheil, of Columbia University. Dr. Herzl devoted his opening address to an account of the position of the Jews in England, "the only country where they enjoy equality of rights." Nordau referred to the growth of anti-semitism, the accusations of murder for religious purposes, and the Roumanian outrages. Both warmly advocated emigration to Palestine. Zangwill agreed with them, claiming that this new home of the Jews "will be for the rich an ideal which they need even more than the poor Jews need bread." The press was not quite unanimous in the attitude toward the congress. The almost unanimous objection is that the wholesale settlement in Palestine is a mere dream as long as the sultan continues his policy of not allowing any immigration of Jews. Even if that were done away with, the rich Jews would not leave the comforts of their native lands, while the poor ones would not have enough money to defray the expenses of the transportation. As to the fitness of the Jews for agriculture the colonies now existing in Palestine dispelled all doubt. Even in the ranks of those favoring emigration there is no unanimity as to the most desirable place. Mr. Arnold White, for example, arguing strongly for Armenia in preference to Palestine. Indeed, the *Jewish Chronicle* (August 17) comments upon the growing obscurity of the plans of the Zionist promoters as compared with their direct utterances in the beginning. To the reversal of public opinion in France within a year since the anti-Dreyfus agitation the paper points as a positive proof of the bright future in store for the "chosen nation," and asserts on the same ground that the Jewish question must be solved in each country without "cowardly flight" to Zion.

Colonies in Argentina.—According to the *Statesman's Year Book* for 1900, there were 318,000 acres of arable land purchased by the Jewish Colonization Association in the Buenos Ayres, Santa Fé, and Entre Rios provinces of the Argentine Republic for colonization purposes. In 1898 there were 7015 Jewish settlers in the 14 existing colonies, of which 11 were in Entre Rios.

Jewish Encyclopædia.—An event of great moment in the annals of Judaism for the year 1900 was the commencement of work on the *Jewish Encyclopædia*. This great undertaking is planned in twelve volumes, two of which are to be published every year for six years. It is the first work of its kind, in the number of scholars of all lands who have promised their co-operation, in the names of those who stand responsible for the various departments in their charge, and in the variety of subjects which are to be treated in this all-embracing reference book. When the work is completed and the aim of one of its editors, Joseph Jacobs, "to present the

whole truth," is attained, many existing misconceptions (some malicious, but most unintentional) will be cleared away with regard to the Jews. The names of Cyrus Adler, Ph.D., Professor Richard Gottheil, Professor Gotthard Deutsch, Louis Ginzberg, Ph.D., Joseph Jacobs, B.A., Rabbi Marcus Jastrow, Ph.D., Professor Morris Jastrow, Jr., Rabbi Kaufmann Kohler, Ph.D., Isidor Singer, Ph.D., Professor Crawford Howell Toy, LL.D., and I. K. Funk, LL.D., in the board of editors seem to be sufficient guarantee that scientific objectivity and thoroughness, and not the glorification of the Jews, at all hazards will be the guiding motive of the encyclopædia. The publishers are Funk & Wagnalls.

Another work that will aid in the better understanding of Judaism by non-Jews is the English translation of the Babylonian Talmud by Mr. Rodkinson. The volume published during the year 1900 is one of the most interesting parts of the Talmud. It is the section on jurisprudence, and contains some of the loftiest moral precepts side by side with minutest details of regulations of private life.

The chief events in the life of the Jews in the United States during 1900 were the second triennial convention of the Council of Jewish Women of America on March 4-9 at Cleveland, O.; the national conference of Jewish charities at Chicago, Ill., on April 28; the dedication on May 30 of the new building given by Mr. Jacob H. Schiff to the Young Men's Hebrew Association; besides, several new temples and synagogues were built in various parts of the Union. In England the new building of the *Jews' College* was opened in London on April 6 with great splendor. The Jewish Colonization Association officially took over the administration of the colonies of Baron Edmond de Rothschild in Palestine, and the Zionist Congress has been mentioned elsewhere. The seventieth anniversary of Karl Goldmark, the famous composer, was celebrated on April 18 throughout Germany by performances of his works, and the ranks of Jewish notabilities have thinned out through the deaths of the artist Munkácsy (*q.v.*)—real name Michel Leon Leib—and the great conductor of music, Herman Levi (*q.v.*).

JOHNS HOPKINS UNIVERSITY, Baltimore, Md., organized 1876. The principal work of this institution, in some respects the most notable of our American universities, is done quietly and with little observation from the outside world. During the year 1899-1900 the academic staff numbered 131, including 47 in the Johns Hopkins Medical School. The number of students enrolled was 645, of whom 469 already held degrees, gained at 153 colleges and universities. Of the last-mentioned class, 185 were enrolled in the department of philosophy and arts, and 284 in the medical department. Of the 176 students not college graduates, 159 were candidates for the degree of Bachelor of Arts, and 17 were special students. At the close of the year 47 candidates received the degree of B.A., 44 the degree of M.D., and 35 the degree of Ph.D. During 24 years, 3844 students have studied at Johns Hopkins, of whom 2784 have followed graduate studies. Since degrees were first conferred in 1878, 666 students have received the B.A. degree, 113 the M.D. degree, and 549 the Ph.D. degree. The medical school granted its first degrees in 1897. In spite of the high standard of admission, the number of students has been large, and it is annually increasing in importance. The university library contains 94,370 volumes and 100,000 pamphlets, the year's increase being 3288 volumes (1421 by gift) and 5000 pamphlets. During the year a small charge was made for admission to the courses of public lectures and lectures to teachers. The conclusion is drawn from the resulting diminished attendance on the first-mentioned course that either from inattention or from unwillingness to pay the nominal charge the public does not respond to the overtures made by the university. On the other hand, the courses offered to teachers were remarkably well attended, and the charges were promptly met. The John Marshall prize was awarded on commencement day to Jas. M. Callahan, '97, Ph.D., for his recent volume, *Cuba and International Relations*; the Tocqueville medal, offered annually to students by Baron Pierre de Coubertin, of Paris, was granted to Jas. E. Routh, Jr., class of 1900, for his essay on the French colonial system. A new Sylvester prize in mathematics was established in 1900, which will be given annually to the two men who have helped the university most in the field of mathematics. The recipients in 1901 will be Lord Kelvin and Professor Simon Newcomb.

The most important event of the year affecting the material prosperity of the university was the conditional gift of a magnificent tract of land as a new site for the institution. This is probably one of the most important gifts ever received, and will place the university in rural surroundings, where it properly belongs. The condition attached to this gift is the securing of an endowment fund of \$1,000,000, and this sum has been nearly made up by friends of the university. The straitened finances resulting from the depreciation of the Baltimore & Ohio Railroad securities led the university again to ask the State Legislature for a money grant, in response to which an appropriation of \$24,000 was made for each of the two succeeding years. Important and intimate relations with the Maryland State Geological

Survey and Weather Bureau continue to be held by the university. There appeared during the year the twenty-second volume of the *American Journal of Mathematics*; *American Journal of Philology*, Vol. XXI.; *American Chemical Journal*, Vol. XXIV.; *Journal of Experimental Medicine*, Vol. V.; *Modern Language Notes*, Vol. XV.; *Studies in Historical and Political Science*, Series XVIII.; *Contributions to Assyriology*; *Biological Memoirs*, and *Journal of Terrestrial Magnetism*. In November, Dr. Daniel C. Gilman, after twenty-five years of service, announced his intention to resign from the presidency. On October 16-17, 1901, the twenty-fifth anniversary of the actual beginning of instruction will be celebrated.

JOHNSTON, MARY, the author of the historical novel *To Have and to Hold*, one of the most widely read books of the year, is a Virginian by birth and ancestry. She was born at Buchanan in 1870. Of late years she has lived at Birmingham, Ala., where her father has been identified with railroad and industrial enterprises. She has travelled extensively both in this country and abroad. *Prisoners of Hope*, her first novel, appeared two years ago, and was an immediate success. The scene of both romances is colonial Virginia. Miss Johnston writes in a simple style that is extremely picturesque, and presents stirring scenes with great swiftness of motion. She has a rich imagination and some gift for describing the scenes of the forests. Under the name *By Order of the Company*, *To Have and to Hold* reached an enormous sale in England.

JOINVILLE, Prince de, FRANÇOIS FERDINAND PHILIPPE LOUIS MARIE D'ORLEANS, third son of King Louis Philippe of France, died June 16, 1900. Born at Neuilly, August 14, 1818, he entered the French navy at 13 years of age, shortly after his father's accession. In the Mexican War of 1838 he took a prominent part at the bombardment of San Juan d'Ulloa and Vera Cruz. He entered the gates of the latter at the head of a land force, and with his own hands captured General Arista, for which he received the cross of the Legion of Honor. In 1840 his father sent him to bring the remains of Napoleon from St. Helena. After a visit to the United States, where he was warmly received, in 1843 he went to Rio Janeiro, where he married the sister of Don Pedro II. The same year he was promoted rear-admiral, and in 1844 commanded the squadron that bombarded Tangiers and took Mogador. For his gallantry there he was made vice-admiral. When the constitutional monarchy was overthrown by the revolution of 1848 he joined his family in their exile in England. With the outbreak of the American Civil War the Prince de Joinville came to the United States, accompanied by his son, the Duc de Penthièvre, and his two nephews, the Comte de Paris and the Duc de Chartes. His son entered the United States Naval School, then at Newport, while the nephews were appointed to General McClellan's staff and served with gallantry in the Peninsular and other campaigns. The prince also accompanied McClellan, who highly valued his military experience and sound judgment. This campaign he afterward described in an article which was published in the *Revue des Deux Mondes*. After the first defeat of France in 1870 he sought in vain to be allowed to serve in the army of his country. Finally, under the pseudonym of "Colonel Lutherod" he was able to take part in the campaign of the Army of the Loire. But his identity was disclosed to Gambetta, minister of war, by whose orders he was arrested and conveyed to England. In 1871 the edict of banishment was abrogated by the French Assembly and he took his seat in that body. He declined further elections after 1876, extreme deafness rendering continued political activity well-nigh impossible. In 1886, in common with other Orleanist princes, his name was stricken from the French navy list. He often contributed to the *Revue des Deux Mondes*. Most of these writings were republished in book form, and include *Etude sur la Marine* (1859), and *La Guerre d'Amerique, Campagne du Potomac* (1862).

JOKAI, MOR (MAURUS), the great novelist of the Hungarians, is rapidly becoming better known to English-speaking people. During 1900 *Debts of Honor*, one of his most powerful novels, was translated by Arthur B. Yolland. Other translations of the year are *The Baron's Sons*, by P. F. Bicknell; *The Poor Plutocrats*, by R. Nisbet Bain; *Dr. Dumany's Wife*, by F. Steinitz; *A Modern Midas*; *The Day of Wrath*, and *A Christian but a Roman*.

Jokai was born at Kormorn in 1825 and brought up amid Calvinistic influences. He was left an orphan at 13. He studied at the schools of Pápa and Kecskemét, where the Hungarian poet Petöfi was his schoolmate. At this time Jokai showed great artistic talents, but the success of his first drama, *The Jew Boy*, which won the prize of the Academy of Arts and Sciences, made him forsake art for literature. In 1846 he published his first romance, *The Days of the Week*, which was well received. In the same year he obtained the lawyer's diploma at Pesth, but he never practised this profession. He chose rather to be a power in journalism and literature, and to plunge deep into the revolutionary struggle. He was one of the young patriots who came under the influence of Szechenyi and of Kossuth. In 1847

Jokai edited a weekly paper half political and half literary, which included Petöfi among its contributors. Meanwhile Jokai's novels, dealing as they did with the social and political principles of the time, were fanning the fire of the Revolution. When the War of Independence was ended the Austrian government sentenced him to death, but by the cleverness and devotion of his wife, Rosa Laborfaloi, the greatest of Hungarian tragedians, he escaped punishment. During the following ten years Hungarian literature was kept alive almost solely by the genius of Jokai. Austrian rule made political writing impossible, so he wrote fiction and drama. Since Hungary obtained a parliament Jokai has been continually elected member of the chamber. Belonging at first to the Moderate Opposition, he passed over to the Liberal governmental party, where he was long one of its most prominent speakers; he defended the necessity of a union between Austria and Hungary under the direction of a ministry representing both nations, and under the common authority of the emperor. It was his strenuous efforts which brought about the freedom of the press. From 1858 he was also an active editor, and a comic paper, the first in Hungary, which was then started by him, was under his direction until 1881 and proved a great success. In 1863 he founded the *Hon* (Fatherland), a political daily very widely read, in which many of his romances first appeared. He has lately edited the government's organ, the *Nemzet* (Nation). In 1894 Hungary celebrated the completion of his fifty years of literary life by issuing a beautiful jubilee edition of his works. The nation's love for him was expressed by all classes. Groups of poor people combined to buy the copies, which were sold at \$100 each.

His original works, which comprise nearly 300 volumes, touch upon various departments of *belles lettres*. About all of his 200 novels have been translated into German and many of them into other languages. His most celebrated novels include, besides those already mentioned: *The Golden Age in Transylvania* (1851); *The Man with the Two Horns* (1852); *The Turkish Domination in Hungary* (1853); *An Hungarian Nabob* (1854), and its continuation, *Kárpáthy Zoltán* (1855); *The New Landlord* (1862, English translation by A. Patterson, 1865); *The Romance of the Next Century* (1874); *Black Diamonds* (1870); *Beloved to the Scaffold* (1882); *The White Woman of Leutschau*; *The Three Marble Heads* (1880); *The Heart on the Brow* (1890), and *Timar's Two Worlds*, among the finest of those which have been translated into English. The dramas of Jokai include: *King Koloman* (1868); *Manhies Sinister* (1856); *Georges Douza* (1858); *Miltos* (1878). In 1881 he published a political history. In 1899 he was at work upon a Hungarian Niebelungen Lied, in which history and tradition are blended.

The masterly literary work of Jokai has had for its effect the consolidation and strengthening of the Magyars as a nation. With this intention in writing he has held before his countrymen the history, traditions, and ancient customs of the race; he has told of every class, from the swineherd to the statesman; he has vividly pictured every section of the Hungarian country and even described the national dress and customs at the different periods of history. His novels are essentially idealistic. He admires the virtues of courage and endurance combined with bodily strength perhaps more than the higher faculties of the mind; his heroes are all strong men. As a romancer he has been compared with Scott and Dumas. His invention is boundless. His style is rich in intensity and imaginative quality—characteristics which are often carried to an extreme and cause the lack of unity and improbability which detract from the perfection of his novels as works of art. *Debts of Honor* is found by English-speaking people to be among the best of his novels, since it has the element of restraint often lacking. With his own people Jokai is the well-beloved patriarch in whom there is no reproach.

JONES, ALFRED, engraver, died April 28, 1900. Born in Liverpool, England, April 7, 1819, he came to New York in 1834, and after engaging in bank-note engraving achieved his first well-known success by engraving a plate, "The Proposal," for *Graham's Magazine*. Subsequently he made many plates for this periodical, for *Godey's*, and for various art publishers. After 1848 he devoted himself chiefly to bank-note engraving. For the Columbian series of postage stamps (1893) he made the two-cent, thirty-cent, four-dollar, and five-dollar plates. His later works include a portrait of George Washington and one of Thomas Carlyle. Jones was a member of the American Water-Color Society, and in 1841 became an associate of and ten years later was admitted to full membership in the National Academy of Design, of which for many years he was secretary and treasurer. In 1867 he was made vice-president of the British-American Bank Note Company.

JOUBERT, PETRUS JACOBUS, commandant-general of the Boer forces and vice-president of the South African Republic, died of peritonitis at Pretoria, March 27, 1900. The passing of Joubert not only constituted the severest blow, perhaps, that could be sustained by the Transvaal in its fight for independence, but marked a loss

from the ranks of the world's military men of one who was clever in tactics, determined in fight, and knightly in his bearing toward both friend and foe. Joubert was born in the Oudtshoorn district of Cape Colony in 1834 of mingled French and Dutch blood, and was descended from a Joubert—a Huguenot—who in order to escape the persecutions ensuing after the revocation of the Edict of Nantes, emigrated to South Africa in 1687. Little is known of General Joubert's youth, but it seems that he obtained an elementary education and engaged in trading expeditions northward, thus gaining an early knowledge of the Transvaal. Here he settled—in the Wakkerstroom district, just north of the Laing's Nek and Majuba Hill region of Natal—and became a farmer and cattleman, and later, through his reputation for shrewdness, added the duties of a law agent. Early in the sixties he was elected to represent his district in the *Volksraad*, and in 1870, after holding minor official positions, was appointed attorney-general of the republic, after which time he was an important factor in political affairs.

When President Burgers visited Europe in 1874 Joubert acted as president. During these years he acquired a reputation for opportunism, that brought him the sobriquet of "Slim [crafty] Piet;" but after his invaluable services in the war of 1880-81 the appellation lost whatever offensive meaning it may have suggested, and in his later years was used by his countrymen only as a tribute to his cleverness. When in 1877 Sir Theophilus Shepstone issued the proclamation by which Great Britain annexed the Transvaal, Joubert was one of the very few prominent Boers who would not recognize British sovereignty. Against this the Boers rose in 1880, Joubert becoming commandant-general of the forces. By great tact and military ability he effected an organization that successfully resisted the British, and he commanded in person at Laing's Nek, Ingogo, and Majuba Hill, bringing the war practically to a close in the last-named battle, when, on February 27, 1881, with less than 100 men he attacked and defeated 487 intrenched British under Sir George Colley. The treaty concluding this war prohibited the extension of Transvaal territory; and when in 1884 Kruger proposed the annexation of Bechuanaland Joubert, the commandant-general, frustrated the plan by saying: "I positively refuse to hold office under a government that deliberately breaks its covenants—and we have made covenants with England." He was a man of finer fibre than Kruger; he believed to some extent in progressiveness and in conciliatory measures toward the Outlanders, and it is safe to say that had his counsels prevailed during the several years of friction preceding the outbreak of October, 1899, the war would have been averted or, at least, greatly deferred. Though a friend of Kruger, he frequently differed with him on political questions, and twice unsuccessfully stood against him for the presidency; in 1893 the vote was 7881 to 7009, and in 1898, 12,858 to 2001. During these years, as Kruger's prominence and influence grew, Joubert's in some degree declined. He rendered a noteworthy service, however, when, in January, 1896, he brought about the capture of Dr. Jameson's raiders, and in May of that year was elected vice-president.

At the time of his death Joubert had been for nearly twenty years a member of the executive council, in which his vote had usually been in the interest of progress and peace, but he had little to do with the negotiations immediately preceding the war. After the Jameson Raid, however, he developed a military organization so thorough that mobilization for active service could be effected in forty-eight hours; to him also was largely due extensive purchases of artillery. Thus equipped, as commandant-general he entered upon the campaign in northern Natal, which soon proved so disastrous to British arms and prestige. Early in 1900 he fell ill, and, it was reported, retired to Pretoria. At the time of his death General Cronje had been captured, but the Boer cause was not crushed; Ladysmith had not been relieved; he was not conquered.

JUDD, ALBERT FRANCIS, chief justice of the Supreme Court of Hawaii, died at his home in Nuuanu Valley, May 20, 1900. Born in Honolulu in January, 1838, he graduated at Yale in 1858 and subsequently at the Yale Law School. King Kalakaua appointed him to the supreme bench as an associate justice in November, 1881.

KAMERUN. See CAMEROON.

KANSAS, a central Western State of the United States, has an area of 82,080 square miles. The capital is Topeka. Kansas was organized as a Territory, May 30, 1854, and admitted as a State, January 29, 1861.

Agriculture.—The following shows the production and value of the principal crops for 1900: Corn, 163,870,630 bushels, \$52,438,602; wheat, 82,488,655 bushels, \$45,368,760; oats, 43,063,943 bushels, \$9,904,707; barley, 4,186,802 bushels, \$1,381,645; rye, 1,922,481 bushels, \$826,667; potatoes, 7,246,224 bushels, \$3,478,188, and hay, 4,031,461 tons, \$18,343,148. The corn crop was short, but there was an unusually large yield of wheat, the rise from 42,815,471 bushels in 1899 to 82,488,655 easily giving Kansas first rank as a wheat-producing State. Kansas also held second

rank among the States as a producer of hay, and third as a producer of barley. The wool clip for 1900 was estimated as follows: Number of sheep, 270,716; wool, washed and unwashed, 2,165,728 pounds; wool, scoured, 714,690 pounds.

Industries.—The annual report of the Bureau of Labor Statistics for 1899 states that of 79 labor unions, 37 reported increased wages over 1898, 10 decreased wages, and 32 no change. Returns from 138 lead and zinc plants show an output in 1899 of 14,186,670 pounds of lead, valued at \$375,553; and 128,120,310 pounds of zinc, valued at \$2,738,431. The total coal product of 128 mines in 1899 was 3,852,267 short tons, spot value, \$4,478,112, the highest tonnage and value in the history of the State. The amount of petroleum produced was 69,700 barrels, value, \$52,275. Quarrying yielded sandstone and limestone to the value of \$428,630. There were 283 manufacturers of cigars, and 42 of tobacco, and the output for the calendar year 1899 was 23,724,039 cigars and 37,283 pounds of tobacco. The production of oleo-margarine for the fiscal year ended June 30, 1900, was 16,686,460 pounds. The number of commercial and business failures in 1900 was 82, as compared with 84 in 1899 and 139 in 1898. The percentage of failures to the total number of business concerns in the State was .36, and the aggregate liabilities were \$290,481.

Banks.—On October 31, 1900, there were 111 national banks in operation and 122 in liquidation. The capital stock was \$8,429,600; circulation, \$4,572,802; deposits, \$30,721,013, and reserve, \$12,819,892. The State banks, June 4, 1900, numbered 384, and had capital, \$6,685,000; deposits, \$28,491,889, and resources, \$38,352,572. The exchanges at the clearing houses at Topeka and Wichita for the year ending September 30, 1900, aggregated \$62,045,241, an increase of \$8,032,024 in a year.

Education.—In 1899 there were 189 public high schools, with 472 teachers and 13,558 students; 15 private secondary schools, with 75 teachers and 827 students; 1 public normal school, with 31 teachers and 1428 students, and 7 private normal schools, with 56 teachers and 604 students. Twenty colleges and universities for men and for both sexes reported 330 professors and instructors, 4325 students, and a total income of \$331,557; 1 school of technology reported 45 professors and instructors, 871 students, and a total income of \$98,307; and 2 colleges for women reported 23 professors and instructors, 154 students, and a total income of \$25,931. The professional schools comprised 2 theological schools, with 8 instructors and 32 students; 2 law schools, with 16 instructors and 176 students; and 3 medical schools, with 71 instructors and 168 students.

National Guard.—The Kansas National Guard comprises 6 staff officers, 93 artillery, and 1090 infantry. The total number of troops authorized is 2131, and the total number in the State liable to military service is 110,000. The State appropriation for military purposes amounts to \$29,150.

Population.—According to the United States census, the population in 1890 was 1,427,096; in 1900, 1,470,495; increase for the decade, 43,339, or 3 per cent. The four largest cities, with population in 1900, are: Kansas City, 51,418; Topeka, 33,608; Wichita, 24,671, and Leavenworth, 20,735.

Elections.—The State election in Kansas in 1900 resulted in a victory for the Republican nominee for governor, W. E. Stanley, over his Fusionist opponent, John W. Breidenthal, by a plurality of about 17,000. The representatives of Kansas, 7 Republicans and 1 Populist, in the 56th Congress were returned to the 57th Congress with but two exceptions. Charles F. Scott (Rep.) was nominated and elected as congressman at large in place of W. J. Bailey (Rep.), and A. M. Jackson (Fus.) was nominated and elected by a plurality of less than 100 votes in place of E. R. Ridgely (Pop.). The State Legislature of 1899 consisted, in the Senate, of 12 Republicans and 28 Fusionists, and in the House of 90 Republicans and 32 Fusionists. In 1901 the Legislature will consist, in the Senate, of 31 Republicans and 9 Fusionists, and in the House of 81 Republicans and 43 Fusionists. In the national election McKinley received 185,955 votes, and Bryan, 162,601. This gave McKinley a plurality of 23,000, which was greater by 13,000 than his plurality in 1896.

Constitutional Amendment.—At the elections held in November a constitutional amendment was adopted increasing the number of justices of the Supreme Court from three to seven and providing for the hearing of some cases by less than the full court on the condition, however, that when cases are so heard at least four justices must concur in order to render the decision valid. The amendment was adopted by a vote of 123,721 to 35,474.

State Officers and National Representatives.—State officers for 1900: Executive—governor, W. E. Stanley; lieutenant-governor, H. E. Richter; secretary of state, G. A. Clark; treasurer, F. E. Grimes; auditor, George E. Cole; attorney-general, A. A. Godard; superintendent of education, F. Nelson; commissioner of agriculture, F. D. Coburn; adjutant-general, S. M. Fox; superintendent of insurance, W. V. Church—all Republicans.

Judiciary: Supreme Court—chief justice, F. Doster (Pop.); associate justices, W. R. Smith (Rep.), and W. F. Johnston (Rep.); clerk, D. A. Valentine (Rep.).

Congressional representatives for 1900 (56th Congress): W. J. Bailey, Charles Curtis, Topeka; J. D. Bowerstock, Lawrence; E. R. Ridgely, J. M. Miller, Council Grove; W. A. Calderhead, Marysville; W. A. Reeder, Logan; C. I. Long, Medicine Lodge—all Republicans, except Ridgely (Pop.).

Senators for 1900 (56th Congress): Lucien Baker (until 1901) (Rep.), and W. A. Harris (until 1903) (Pop.).

State officers for 1901: Executive, same as for 1900.

Judiciary: Same as for 1900.

Congressional representatives for 1901 (57th Congress): Same as for 1900, except that C. F. Scott (Rep.), from Burlington, and A. M. Jackson (Dem.), from Winfield, replace, respectively, W. J. Bailey and E. R. Ridgely.

Senators for 1901 (57th Congress): W. A. Harris (until 1903), from Linwood; other vacant.

KANSAS, UNIVERSITY OF, at Lawrence, Kan., founded in 1866. A new building for the department of chemistry, equipped with the most approved modern appliances, was opened in September, 1900. In the last academic year the institution had a faculty of 78 and a student enrolment of 1150, distributed by schools as follows: Graduate, 57; arts, 584; law, 177; pharmacy, 79; engineering, 157; fine arts, 98; medicine, 37. The library contains 33,135 volumes. The university has productive funds to the amount of \$142,000, and its income for the last college year was \$160,000. See UNIVERSITIES AND COLLEGES.

KEELER, JAMES EDWARD, astronomer and director of Lick Observatory, Mt. Hamilton, Cal., died August 12, 1900. He was born at Lasalle, Ill., September 10, 1857, and moved to Mayport, Fla., in 1869, where he prepared for college. He commenced making astronomical observations at Mayport in 1875, which were continued until he entered Johns Hopkins University in 1877. He graduated in 1881 with the degree of A.B., after acting as assistant in several experimental courses, and accompanying the naval observatory expedition to view the eclipse of July 29, 1878, at Central City, Col., while an undergraduate.

Professor S. P. Langley, of the Allegheny Observatory, appointed Keeler an assistant on his graduation, and took him to Mt. Whitney, Cal., where the important experiments with the bolometer to determine the value of the "solar constant" were made and the region of the infra-red spectrum was investigated. In 1883-84 Keeler studied in Europe at Heidelberg and Berlin, returning to assist Professor Langley in his investigations. In 1886 he was appointed assistant at Lick Observatory, and in 1888 he was made astronomer, being placed in charge of the spectroscopic work. He designed the large spectroscope at the observatory, and with it made valuable observations. Professor Keeler's drawings of the planets have acquired considerable renown, while all of his papers and researches have been most favorably received in Europe. In 1891, resigning from the staff of Lick Observatory, he returned to Allegheny Observatory as director and professor of astrophysics in the Western University of Pennsylvania, where his spectrographic work was continued. In 1895 he was able to prove the meteoritic composition of the rings of Saturn. In 1898 he was called back to Lick Observatory to become its director, and in the two remaining years of his life accomplished much. Using the Crossley reflector, a telescope which he virtually constructed, he obtained excellent photographs of the nebulae. (See ASTRONOMICAL PROGRESS.) Professor Keeler received the degree of Doctor of Science from the University of California in 1893, the Rumford Medal of the American Academy of Arts and Sciences in 1898, and the Henry Draper Medal of the National Academy of Sciences in 1899. He was a member of the National Academy of Sciences, an associate of the American Academy of Arts and Sciences, a fellow of the Royal Astronomical Society, and a member of other scientific societies in Europe and the United States. He was the author of many scientific papers, and at the time of his death was an editor of the *Astrophysical Journal*.

KEELEY, LESLIE E., M.D., died in Los Angeles, Cal., February 21, 1900, at the age of 64 years. He graduated at Rush Medical College, Chicago, in 1864. In the later years of his life Keeley became widely known as the inventor of the treatment or cure of inebriety and the habit of using narcotic drugs that bears his name. He was president of the Leslie E. Keeley Company.

KELLY-KENNY, Lieutenant-general THOMAS, commander of the sixth division of the British army in South Africa, was born in 1840, and entered the army as ensign in 1858. He served in China in 1860, being present at the taking of the Taku forts, and in Abyssinia in 1867-68. He was assistant adjutant-general from 1887 to 1896, and commanded the infantry brigade at Aldershot in 1896-97. He distinguished himself in the invasion of the Orange Free State, and was instrumental in surrounding General Cronje at Paardeberg. See TRANSVAAL.

KEMPF, LOUIS, rear-admiral of the United States navy, had command of the American fleet in the harbor of Taku during the Chinese difficulties of June, 1900.

Rear-Admiral Kempff, who was born at Belleville, Ill., in 1841, graduated from the Naval Academy in 1861. This same year he saw service on the *Vandalla* in the blockade off Charleston, and was on that vessel at the capture of the steamer *Henry Middleton*, of Charleston. Appointed acting master in 1861, he was present at the battle at Port Royal, S. C. On the flagship *Wabash*, on the *Susquehanna* and other vessels he took part in a number of important naval engagements. In 1862 he was promoted lieutenant, four years later lieutenant-commander, commander in 1876 and captain in 1891. In 1868 he was made executive officer of the *Independence* at San Francisco. The following year he went to Siberia with the total eclipse expedition, and in 1870 he was ordered to the Pacific Squadron for duty. Of late years he has been frequently on duty at Mare Island, Cal., from 1896 to 1899 in command of the receiving-ship *Independence*. In 1899 he was promoted rear-admiral and sent to the Philippines. As a result of the development of the Chinese situation, Rear-Admiral Kempff was ordered from Manila with his flagship *Newark* to the harbor of Taku. When the forts were bombarded by the war-ships of the allies, Rear-Admiral Kempff alone refused to take part; he viewed the bombardment as an act of war, and considered that his orders did not warrant such proceedings on the part of the American fleet. His position was approved by the United States government. On June 24, 1900, he was superseded in chief command by Rear-Admiral Remey, but remained at Taku as second in command.

KENNEDY, JOHN, M.A., D.D., a prominent Scottish Congregational minister, retired, died at Hampstead, England, February 6, 1900. He was born June 14, 1813, at Aberfeldy, Perthshire, and was educated at Inverness Royal Academy, King's College (Aberdeen), Edinburgh, and Glasgow universities, and the Glasgow Congregational Theological Academy, finishing his course in the last-named institution in 1835. He was a pastor in Aberdeen from 1836 to 1846, when he accepted a call to the old Stepney meeting-house, London, a charge he retained until his retirement in 1882. From 1872 to 1876 he was professor of apologetics at New College, London, and from 1884 to 1895 was chairman of the New College council, while from 1843 to the time of his death he was director of the London Missionary Society. From 1866 to 1873 he edited *The Christian Witness* and from 1887 to 1890 *The Evangelical Magazine*. His writings include: *The Natural History of Man* (1851); *The Divine Life, a Book of Facts and Histories*, 1858; *Work and Conflict* (1860); *Rest Under the Shadow of the Great Rock* (1864); *Pilate's Question* (1877); *The Gospels, Their Age and Authorship* (1880); *A Handbook of Christian Evidences* (1880); *The Resurrection of Jesus Christ* (1881); *The Pentateuch, its Age and Authorship* (1884); *The Self-Revelation of Jesus Christ* (1887); *The Unity of Isaiah* (1891); *The Book of Jonah* (1896); *Old Testament Criticism and the Rights of Non-Experts* (1897); *The Book of Daniel from the Christian Standpoint* (1898). *The Divine Life* and the *Handbook of Christian Evidences* have had a large circulation in both England and America.

KENTUCKY, an east central State of the United States, has an area of 40,400 square miles. Kentucky was admitted to the Union June 1, 1792. The capital is Frankfort.

Mineralogy.—Prior to 1899 the coal product in Kentucky had never reached a total of 4,000,000 tons, and in only one year (1898) had the value of the output reached as high as \$3,000,000, while in 1899 an increase of more than 500,000 was added to the above figures both in the tonnage and in the value. The total product of the 97 mines reporting in 1899 was 4,607,255 short tons; spot value, \$3,618,222. Of the total amount mined 118,184 short tons were made into coke, about 1.55 tons of coal being used to make one ton of coke. The production of iron ore in 1899 was 35,384 long tons of red hematite, the average value of which was \$1 per ton. Quarrying yielded sandstone and limestone to the value of \$208,843.

Agriculture.—The following shows the production and value of the principal crops for 1900: Corn, 69,267,224 bushels, \$27,706,890; wheat, 12,442,846 bushels, \$8,585,564; oats, 9,309,293 bushels, \$2,885,881; rye, 294,593 bushels, \$185,594; potatoes, 2,807,490 bushels, \$1,403,745; and hay, 390,064 tons, \$4,427,226. The *Bulletin* of the National Association of Wool Manufacturers estimated the wool clip of 1900 as follows: Number of sheep, 514,643; wool, washed and unwashed, 2,701,876; scoured wool, 1,675,163.

Manufactures.—In 1899 there were 316 manufactures of cigars, and 127 of tobacco, the combined output for the calendar year being 54,323,245 cigars, 34,459,089 pounds of plug tobacco, 181,846 pounds of fine cut, 5,380,617 pounds of smoking, and 135,260 pounds of snuff. The number of grain and fruit distilleries in operation was 417, an increase in a year of 49. The production of fruit brandy during the fiscal year ending June 30, 1900, was 71,165 gallons; amount of spirits rectified, 6,550,644 gallons; distilled spirits gauged, 51,125,361 gallons; and production of fermented liquors, 494,006 barrels. In 1899 the production of pig iron was 119,019

long tons, and in 1900 it fell to 71,562 long tons. During the year ending March 1, 1900, hogs packed and marketed at Louisville numbered 397,975.

Commerce.—During the fiscal year ending June 30, 1900, the imports of merchandise at the delivery port of Louisville aggregated in value \$341,087, an increase in a year of \$73,217; exports, none.

Railroads.—The new railway construction reported for the calendar year 1900 was 33.35 miles, giving the State a total mileage of 3127.31.

Banks.—On October 31, 1900, the total number of national banks organized was 120, of which 81 were in operation and 39 in liquidation. The active capital aggregated \$12,875,900; circulation, \$9,035,286; deposits, \$36,671,300; and reserve, \$11,662,683. The State banks, June 30, 1900, numbered 219, and had capital, \$12,764,377; deposits, \$32,295,874; and resources, \$48,849,339; loan and trust companies, 3, with capital, \$1,150,000; deposits, \$322,081; and resources, \$2,388,078; and private banks, 13, with capital, \$339,700; deposits, \$1,426,150; and resources, \$1,864,635. The exchanges at the clearing houses at Lexington and Louisville for the year ending September 30, 1900, aggregating \$437,110,577, a net increase over 1899 of \$26,977,558.

Education.—In 1899 there were 69 public high schools, with 227 teachers and 5426 secondary students; 82 private secondary schools, with 281 teachers and 3077 secondary students; 6 public normal schools, with 17 teachers and 382 students in normal courses; and 8 private normal schools, with 40 teachers and 731 students in normal courses. Thirteen colleges and universities for men and for both sexes reported 191 professors and instructors, 3276 students, and a total income of \$274,960; and 11 colleges and seminaries for women reported 129 professors and instructors, 1097 students and a total income of \$93,125. The professional schools comprised 3 theological schools, with 21 instructors and 325 students; 3 law schools, with 14 instructors and 111 students; and 6 medical schools, with 131 instructors and 816 students.

National Guard.—The Kentucky National Guard consists of 7 staff officers and 1762 infantry. The total number of troops authorized is 3500, and the total number of men liable to military service is 415,000. The State appropriations for military purposes were \$7000.

Population.—According to the United States census, the population in 1890 was 1,858,635; in 1900, 2,147,174; increase for the decade, 288,539, or 15.5 per cent. The four largest cities, with population in 1900, are: Louisville, 204,731; Covington, 42,938; Newport, 28,301; and Lexington, 26,369.

The Goebel Feud.—On January 30 State Senator William E. Goebel, Democratic contestant for governor of Kentucky, and author of the Goebel Election law, was shot in front of the capitol building at Frankfort; he died on February 3, having taken the oath of office as governor on his death-bed. This fatal termination of the Democratic-Republican feud in Kentucky was directly traceable to the Goebel Election law. This law virtually put the counting of votes cast in Kentucky into the hands of three commissioners, to be chosen by the Legislature, so that whoever controlled the election of the commissioners controlled also the returns of the ballots throughout the State. In the Democratic convention of June, 1899, Mr. Goebel obtained the nomination for governor. But a faction of the Democratic party, angered by his unscrupulous political methods, nominated an independent candidate, who took so many votes from Mr. Goebel that, notwithstanding alleged dishonesty on the part of some of the Democratic county election boards, Mr. W. S. Taylor was declared elected. For such a contingency, however, Mr. Goebel was prepared. A clause in the election law bearing his name provided that the Legislature could, for cause, set aside the decision of the election commissioners. A committee of the Legislature was prepared to submit to that body a report unseating Governor Taylor in Mr. Goebel's favor, with every prospect of its acceptance, when Mr. Goebel was shot. In the meantime hundreds of Republicans armed with rifles and a strongly Republican militia had turned the town into an armed camp. Backed by these Governor Taylor defied the Democrats, adjourned the Legislature, and announced that it should meet a week later at London, a Republican town. Barred out from the State capitol and prevented by the militia from meeting anywhere else within the town, the General Assembly, by a paper passed from hand to hand, approved the findings of the committee of the Legislature adverse to Governor Taylor. Goebel was then administered the oath of office by the chief justice of the Court of Appeals, and upon his death Mr. J. C. W. Beckham, lieutenant-governor upon the Goebel ticket, was sworn in. Governor Taylor sought to gain help from Washington; the President, however, decided not to interfere. Governor Beckham also appealed to the Federal Circuit Court, but Judge Taft denied jurisdiction. Both parties then appealed to the State courts for redress. An agreement was entered into between the parties to the effect that the three suits then pending—Taylor *vs.* Beckham, Marshall (Republican lieutenant-governor) *vs.* Beckham, and Beckham *vs.* Taylor—should be tried before Judge Field of the State Circuit Court in Louisville; that

thence appeal should be promptly taken to the Court of Appeals, and that from there the cases might be carried to the Supreme Court at Washington. The Legislature—of which the Democratic members had been holding session at Louisville and the Republicans at London—finally reconvened at Kentucky upon the assurance of Governor Taylor to the Democrats that they should not be molested. A majority of both Houses then ratified their original declaration in Goebel's favor. An appropriation of \$100,000 was made for the organization of a new militia under Mr. Beckham, for the existing militia had been made strongly Republican both by Governor Taylor and by his predecessor, Governor Bradley. Another \$100,000 was appropriated for the arrest and conviction of Goebel's assassin. Several bills were also passed directed against the Louisville & Nashville Railroad Company. Railroad companies were prohibited from subscribing to campaign funds, and from bringing to the capital without charge men inimical to the officers of the State. The Railroad Commission was further empowered to fix railroad freight rates. The Legislature adjourned on March 13. On March 10 Judge Field, before whom the various actions in the matter of the governorship had been brought, decided that the cases lay outside the jurisdiction of the courts, since the constitution of the State vested in the Legislature the power to decide contests for office. On April 6 this decision was affirmed by the State Court of Appeals. That court was composed of four Democrats and three Republicans, but only Judge Durelle (Rep.) dissented from the majority opinion. The court declared that the power exercised by the Legislature was given to it by the constitution, and that it was not within the court's jurisdiction to question the motives actuating the Legislature in the use of that power. Appeal, on a writ of error, was then taken by Republican counsel to the Supreme Court at Washington. On May 21 the United States Supreme Court dismissed Governor Taylor's appeal on the ground that the matter was wholly a State affair and that Kentucky was "in the full possession of its faculties as a member of the Union."

Trials for Goebel's Murder.—On March 9 warrants were issued for the arrest of Caleb Powers, Republican secretary of state, and of his brother, John L. Powers; of Charles Finley, secretary of state under Governor Bradley; John Davis, captain of the State House Police, and William H. Culton, clerk in the State auditor's office. These persons were charged with complicity in Goebel's murder. Subsequently indictments for murder were brought against the following additional persons: Henry E. Youtsey, Holland Whittaker, Berry Howard, James Howard, and "Tallow Dick" Combs, a mulatto barber. The testimony as adduced in court and sworn to by Youtsey and others, who turned State's evidence, went to show that several schemes had been devised, or at least considered, by Goebel's political enemies to get him out of the way. One of these plans was to bring about a *mêlée* in the Legislature and to shoot Goebel during its progress. When this method proved impracticable the plan of shooting him from the executive building, in which were situated the offices of the secretary of state, appeared to have been adopted. Witnesses swore that before the murder rifles were deposited in the executive building, and that the secretary of state and other Republicans accused of complicity in the crime made incriminating threats. Governor Taylor was believed to have been aware of the plot, and the fact that he gave passes and pardons to four of those who were indicted lent color to this theory. No direct evidence was brought against him, however. On August 18 Caleb Powers was convicted of being an accessory to the murder, and was sentenced to life imprisonment. James Howard, who was charged with having fired the fatal shot, was found guilty on September 26 and sentenced to be hanged. Henry E. Youtsey was also convicted as an accessory to the crime, and sentenced for life on October 20. Appeals were taken in these cases, and others were in progress at the end of the year.

Legislature.—Several acts were passed by the Kentucky Legislature resulting, directly or indirectly, from the assassination of William Goebel and from the political disturbances which this produced. By an act approved March 7 a commission, consisting of Joseph H. Lewis, John K. Hendrick, B. W. Bradburne, John G. Clardy and William M. Moore, was appointed to aid the attorney-general in apprehending and convicting Goebel's murderer. The sum of \$100,000 was appropriated to be expended at the discretion of the commission for this purpose. It having been stated that a railroad entering Frankfort had indirectly aided the Republican party in the State, a bill was passed and approved on March 15 forbidding any railroad company to transport persons free of charge who intended or expected to intimidate officials engaged in the discharge of their duty. Heavy fines were directed to be imposed upon any railroad for violation of this statute, and also upon any persons who furnished the means for free transportation to others in contravention of the purpose of the law. On March 17 an act was approved making it unlawful for any corporation to contribute to the campaign fund of any political party, or by promises or threats to influence the votes of its employees. The act

directed that any corporation which contributed anything of value—money, promises or privileges—to a political or *quasi*-political organization, should upon conviction be fined not more than \$5000 for each offence, and its authority to transact business within the State should be annulled. To make this law more effective it was provided that any representative or employee of a corporation doing business in the State, who acted as middle-man in an improper relation of a corporation to a political organization, should be imprisoned for not longer than one year. Corporations which endeavored to influence the votes of their employees, either directly or indirectly, were to have their charters revoked. By a resolution approved March 13 the Legislature appropriated \$100,000 to be expended upon the order of Governor Beckham for the purpose of reorganizing and increasing the State Guard and of recovering possession of the munitions of war belonging to the State. The resolution set forth that the State Guard was below the strength and efficiency required of it by law, and that a number of the National Guard were "rendering obedience to the orders of W. S. Taylor and D. R. Collier, given without legal authority and in defiance of law." The resolution also stated that the major part of the cannon, Gatling guns, and small fire-arms belonging to Kentucky had been unlawfully removed to distant parts of the State and were in the possession and under the control of W. S. Taylor and other persons not legally entitled to them.

Elections.—In the State election of 1900 J. C. W. Beckham, the Democratic candidate for governor, defeated his Republican opponent by about 4000 plurality. Of Kentucky's 11 representatives in the 56th Congress only 6 will be returned to the 57th Congress. The changes resulting from the election are as follows: H. S. Irwin (Rep.) was elected in place of Oscar Turner (Dem.); D. L. Gooch (Dem.) was nominated and elected in place of Albert S. Berry (Dem.); South Trimble (Dem.) was nominated and elected in place of J. W. Gayle (Dem.); J. N. Kehoe (Dem.) defeated S. J. Pugh (Rep.) by a plurality of about 200 votes; J. B. White (Dem.) was nominated and elected in place of T. Y. Fitzpatrick (Dem.). In the 57th Congress there will be, as in the 56th, 9 Democrats and 2 Republicans. The State Legislature in 1899 was given as, in the Senate, 26 Democrats, 11 Republicans, and 1 Populist, and in the House, 73 Democrats, 27 Republicans, and 2 National Democrats. In 1901 the Legislature will consist, in the Senate, of 25 Democrats and 13 Republicans, and in the House, of 60 Democrats and 40 Republicans. On January 10, 1900, the Legislature, in joint session, declared J. C. S. Blackburn (Dem.) United States senator for the term beginning March 4, 1901, in place of William Lindsay (Dem.). In the national election McKinley received 226,801 votes and Bryan, 234,899. Bryan's plurality was thus over 6000, whereas in 1896 it was only 281.

State Officers and National Representatives.—State officers for 1900: Executive—governor, W. S. Taylor; lieutenant-governor, John Marshall; secretary of state, Caleb Powers; treasurer, W. R. Day; auditor, John J. Sweeney; superintendent of public instruction, John Burke; commissioner of agriculture, J. W. Throckmorton; attorney-general, Cliff J. Pratt; adjutant-general, D. Collier—all Republicans.

Court of Appeals: Chief justice, J. H. Hazelrigg (Dem.); associate justices, J. D. White (Dem.), B. L. D. Guffy (Rep.), G. Du Relle (Rep.), A. R. Burnham (Rep.), T. H. Paynter (Dem.), J. P. Hobson (Dem.); clerk, S. J. Shackelford (Dem.).

Congressional representatives for 1900 (56th Congress): Democrats—C. K. Wheeler, H. D. Allen, J. S. Rhea, D. H. Smith, Oscar Turner, A. S. Berry, J. W. Gayle, G. G. Gilbert, T. Y. Fitzpatrick; Republicans—S. J. Pugh and Vincent Boreing.

Senators for 1900 (56th Congress): William Lindsay (until 1901), of Frankfort, Democrat, and William J. Deboe (until 1903), of Marion, Republican.

State officers for 1901: Executive—J. W. C. Beckham; secretary of state, C. B. Hill; treasurer, S. W. Hager; auditor, G. G. Coulter; adjutant-general, D. B. Murray; attorney-general, R. J. Breckenridge; superintendent of education, H. V. McChesney; commissioner of agriculture, J. B. Noll; commissioner of insurance, J. B. Chenault—all Democrats.

Court of Appeals: Same as for 1900, except that B. L. D. Guffy replaces Hazelrigg as chief justice, and E. C. O'Rear replaces Guffy as associate justice.

Congressional representatives for 1901 (57th Congress): Democrats, C. K. Wheeler (Paducah), H. A. Allen (Morganfield), J. S. Rhea (Russellville), D. H. Smith (Hodgensville), D. Linn Gooch (Covington), South Trimble (Frankfort), G. G. Gilbert (Shelbyville), J. N. Kehoe (Maysville), J. B. White (Irvine); Republicans, Henry S. Irwin (Louisville) and Vincent Boreing (London).

Senators for 1901 (57th Congress): William J. Deboe (until 1903), Republican, and J. S. C. Blackburn (until 1907), from Versailles, Democrat.

KERR, General Lord MARK RALPH GEORGE, G.C.B., an English military officer, died in London, May 17, 1900. He was a son of the sixth Marquis of Lothian, and was born in 1817. After entering the army he saw service in Crimea, being present at the battle of Chernaya and the fall of Sebastopol, and took a prominent part

in the suppression of the Indian mutiny, and was in command of the field force that in April, 1858, effected the relief of Azimgarh. He took part in the Trans-Gogra campaign, and at Delhi commanded as a brigadier-general. In 1874-77 he was in command of the Poonah Division.

KETTELER, CLEMENS AUGUST, Baron von, German minister to China, was killed at Peking, June 20, 1900. He was born at Potsdam in 1853, and after serving a few years in the German army entered the diplomatic service. While attaché at Peking he framed the first treaty between Germany and Corea in 1881, and two years later became acting consul at Canton. In 1892 he was secretary of the German Legation at Washington, where he was recognized as one of the ablest and most popular of the foreign representatives. When the legation was raised to the rank of an embassy the following year, he was made counsellor of state and first secretary to the embassy. In 1896 he was appointed minister to Mexico, and in 1899 minister to China.

KEY, DAVID MCKENDREE, A.M., LL.D., jurist and ex-United States senator from Tennessee, died February 3, 1900. Born in Green County, Tenn., January 27, 1824, he was educated at Hiwassee College, graduating in 1850. He was admitted to the bar, practised law, and during the Civil War served as a lieutenant-colonel in the Confederate army. He was a member of the Tennessee constitutional convention in 1870, and from that year to 1875 was chancellor in the third chancery district. In 1875-77 he served in the United States Senate, and in 1877-80 was postmaster-general. From the latter year until he resigned in 1895 he was United States district judge in Tennessee.

KHIVA, a khanate of central Asia, under the suzerainty of Russia, lying south of the Aral Sea and west of the Oxus River, has an area of about 22,000 square miles and an estimated population of some 700,000, of whom about 400,000 are nomad Turcomans. The people are Mohammedans of the Sunni sect. The capital and chief town is Khiva, with about 5000 inhabitants. The reigning khan is Seyid Mahomed Rahim, who succeeded his father in 1865. He has an army of about 2000 men. Out of an annual revenue of some 500,000 roubles (the rouble is worth 51½ cents) he pays a tribute of 150,000 roubles to Russia. The state has no external relations, except with Russia. The products include wheat, melons and other fruits, cotton, silk, and wool. Khiva and Bokhara are the two Russian vassal states in Asia.

KIAO-CHAU. See CHINESE EMPIRE (paragraph Cities of China).

KING, WILLIAM S., ex-member of Congress, died in Minneapolis, Minn., February 24, 1900. Born in Franklin County, N. Y., in 1828, he went in 1858 to Minnesota, where he was active in supporting the Free Soil party and the antislavery movement. He founded the Minneapolis *Tribune*, and for some time was connected with the St. Paul *Pioneer Press*.

KING'S DAUGHTERS AND SONS, INTERNATIONAL ORDER OF THE, an inter-denominational religious order of service founded in 1886, was estimated to have in 1900 over 500,000 members. These are bound to serve the needy and the suffering. President, Mrs. F. Bottome; secretary, Mrs. Isabella Charles Davis, 156 Fifth Avenue, New York City.

KINGSLEY, Miss MARY H., explorer and writer, died at Simons Town, Cape Colony, June 3, 1900, at the age of about 35 years. She was the daughter of the late Dr. George Henry Kingsley. In 1893 she went to St. Paul de Loanda, in Portuguese West Africa, to study biology, and returned the next year after encountering many difficulties and travelling through parts of the country known only to the natives. In the latter part of 1896 she returned to Africa for the purpose of exploring the lower Niger region and studying its flora. In the elephant and gorilla countries she again had several narrow escapes, travelling frequently up the rivers and through the bush with only native attendants. She travelled through the Niger Coast Protectorate, Cameroon, and Gaboon. The results of her journeys and investigations were published in two books of considerable value—*Travels in West Africa* (1897) and *West African Studies* (1899). A few months before her death she contributed to the Empire Series a small volume, entitled *The Story of West Africa*. Early in 1900 she went to South Africa, and was attached to the military hospital at Simons Town, where after nursing sick Boer prisoners she contracted a fatal illness. She was a fellow of the Anthropological Institute of Britain and Ireland.

KIPLING, RUDYARD, the distinguished Anglo-Indian author, having already by his *Absent-Minded Beggar* contributed to the charitable funds for dependents of English soldiers, went in 1900 to the Cape, where he effected important reforms in hospital service. He also assisted in the publication of the *Friend*, a journal issued at Bloemfontein after the surrender of that town to Lord Roberts.

KITCHENER, General Sir HORATIO HERBERT, G.C.B., K.C.M.G., Lord Kitchener of Khartoum, who was commander-in-chief of the British forces in South Africa after December 3, 1900, was born in Ireland in 1850, was educated at the Woolwich Military Academy, and joined the Royal Engineers in 1871. He did survey duty in Palestine and Cyprus, entered the Egyptian cavalry in 1882, and served in the Nile expedition of 1884-85. He was governor of Suakim from 1886 to 1888, and became sirdar of the Egyptian army in 1890. He commanded the Dongola expeditionary force in 1896, and in 1898 in the expedition to Khartoum destroyed the khalifah's army at the battle of Omdurman. In December, 1899, he was sent to South Africa as chief of staff to Field-Marshal Roberts. He did good service in organizing the transport and train, and made possible Lord Roberts's rapid marches across the South African veldts. His duties during 1900 were chiefly confined to maintaining the lines of communication with Cape Colony. In this service he came into contact with the guerilla bands of the Boers, especially that of De Wet, whom he defeated toward the end of the year. On Lord Roberts's return to England, Lord Kitchener succeeded to the chief command. At this time there was a sudden revival of Boer resistance, which threatened to assume as formidable an aspect as ever. His efforts at administering the conquered republics were not very successful, his leniency encouraging them to rebellion and his rigor driving them to defiance. See TRANS-VAAL.

KITE FLYING. See METEOROLOGY.

KIUKIANG. See CHINESE EMPIRE (paragraph Cities of China).

KNIGHTON, WILLIAM, LL.D., vice-president of the International Literary and Artistic Association of Paris, died March 31, 1900, at the age of 66 years. He was educated at Glasgow University, and went to India, becoming headmaster of the Normal College at Colombo, Ceylon, and then professor of history and logic at Hindu College, Calcutta University. At one time he was assistant commissioner in Oudh. He wrote *History of Ceylon*; *Forest Life in Ceylon*; *Struggles for Life*; *The Private Life of an Eastern King*.

KNIGHTS OF LABOR, organized in 1869, the general assembly being organized in 1878, had in 1899 an estimated membership of 200,000. General master workman, Simon Burns; general secretary-treasurer, John W. Hayes, 43 B Street, Washington, D. C.

KNIGHTS TEMPLARS, the twelfth degree of Masonry, reported for 1900, 43 grand commanderies in the United States and Territories. There are 1022 commanderies under the jurisdiction of the Grand Encampment, with a membership of 119,002. Subordinate commanderies in Delaware, Idaho, Nevada, New Mexico, Sandwich Islands, South Carolina, and Utah, with a membership of 1531, make a total membership of 120,533. Grand master, Reuben H. Lloyd, San Francisco, Cal.; grand recorder, William H. Mayo, St. Louis, Mo.

KNOX, CHARLES EUGENE, D.D., Presbyterian clergyman, died at Bloomfield, N. J., April 30, 1900. He was born at Knoxboro, N. Y., in 1833, graduated at Hamilton College in 1856, and then studied at Auburn and Union theological seminaries. From 1864 to 1873 he had a pastorate at Bloomfield, and in the latter year became president of the German Theological Seminary in that town. He wrote a number of works, among which are *A Year with St. Paul* and *David the King*.

KOERBER, ERNST VON, prime minister and minister of the interior of Austria, was born at Trent, in the Tyrol, on November 6, 1850. He studied law, and began its practice at Vienna in 1872, two years later accepting a post in the ministry of commerce. He remained in this office until 1895, when he was made director of railways. During his twenty-one years' service he has filled many positions, and distinguished himself especially in the work of nationalizing the railways, telegraphs, and telephones, and in the negotiation of commercial treaties. In 1896 he became chief of bureau in the ministry of the interior, and in November, 1897, received the portfolio of commerce in the Gautsch cabinet, remaining in office, however, for only five months. He was minister of the interior in the Clary cabinet, formed October 1, 1899, and after Clary's fall and Wittek's short stay in power was summoned on January 19, 1900, to form a ministry, becoming minister of the interior. The solution of the language question, which Dr. Koerber made the chief feature of his programme, made no headway in the *Reichsrath*, and the prime minister was forced to dissolve the diet and to content himself with carrying on the administrative work of the Empire. See AUSTRIA-HUNGARY.

KONTSEI, ANTOINE DE, pianist and composer, died in January, 1900, at Novograd, Lithuania. He was born in Cracow, October 27, 1817, studied in Warsaw and in Moscow (1830) under Field, then lived in Berlin until 1853, and after travelling widely settled in St. Petersburg in 1857 as a music teacher. Here, three years later, he established a society for the rendering of classical music. In 1867 he removed to

London and later came to America. For four years he lived in Buffalo. Kontski gave concerts in the principal cities of Europe and the United States. In 1899, at the age of 82, he undertook an artistic tournee throughout Russia and Siberia, creating a veritable sensation. Among his compositions are a well-known capriccio, *Le Réveil du Lion*, a mere show-piece which invariably created a furore when interpreted by the composer, and the operas *Les Deux Distracts* (London, 1872), and *Le Sultan de Zanzibar* (New York, 1886), both of no great musical value. His playing was distinguished by brilliancy, tonal beauty and finesse rather than depth and intellectuality.

KROPOTKIN, Prince PETER ALEXEYEVICH, a celebrated Russian revolutionist, whose autobiography, *Memoirs of a Revolutionist*, published toward the close of 1899, was considerably commented on in the press during 1900, is a direct descendant of the grand princes of Smolensk. Though entitled both by birth and education to a position of eminence in the empire, he joined the so-called Nihilist movement in Russia, the aim of which is to establish in Russia a constitutional form of government similar to that of the western European states. He was born in Moscow in 1842. At the age of 15 he was admitted to the corps of Pagus and shortly afterward entered the military school. On graduating in 1862, instead of joining the Imperial Guards, he asked for an appointment in Siberia and was made aide-de-camp to the military governor of Transbaikalia. While serving in this capacity he made a thorough study of the economic and agricultural state of the region. He further investigated the state of the prisons at Nerchinsk, and his report on the subject is said to have produced a profound impression on the czar. The reforms which he recommended were, however, never carried out, and it began to dawn on the young prince that it was futile to look to the imperial government for any amelioration of conditions. He then devoted himself to purely scientific work, and while still connected with the government of eastern Siberia, in the capacity of attaché for Cossack affairs, he travelled widely, ascending the Sungari to Kirin. In 1869 he entered the University of St. Petersburg, and while a student explored in 1871 the glacial deposits in Finland and Sweden. In 1872 he joined the International Working Men's Association and the Chaykovsky revolutionary circle in Russia, and under the assumed name of Borodin devoted himself to propaganda among the working men. In 1874 he was arrested by the imperial police and confined in the fortress of St. Peter and St. Paul in St. Petersburg. In the dungeon of the fortress his health was seriously impaired, and in 1876 he was transferred to the military hospital, from which, with the aid of friends, he succeeded in escaping a few months later in the same year. The thrilling story of the escape is graphically described in Kropotkin's autobiography, as well as in *Underground Russia*, a series of sketches published in English by Stepniak, another revolutionist. After a short stay in England, Kropotkin went to Switzerland and founded in Geneva the anarchist paper, *Le Révolté*. In 1881 he was expelled from Switzerland at the request of the Russian government. After spending some time in England, endeavoring by a series of lectures to arouse public sentiment against the atrocities committed by Alexander III., he went to France, where he was soon imprisoned on the charge of complicity in the explosion which about that time took place at Lyons, and in 1883 he was condemned to five years' imprisonment, though his innocence was demonstrated almost beyond doubt. In 1886 he was liberated through the intervention on his behalf of leading men of science, both French and English. Since then he has lived in England, devoting his time mainly to literary and scientific work. Among his publications may be mentioned a report of the Olekna and Vitim expedition and a catalogue of the elevations of eastern Siberia from his own calculations; a general sketch of the orography of eastern Siberia (1876); the first part of his researches on the glacial period in Finland (1874), the second part having been seized in manuscript by the Russian police and never returned; *In Russian and French Prisons* (1886); *Paroles d'un Révolté* (1884); *La Conquête du Pain* (1888); *Anarchism, its Philosophy and Ideal* (1897, French edition, 1896); *The State, its Part in History* (1898); *Fields, Factories, and Workshops* (1899), and the *Memoirs of a Revolutionist* (1899). Kropotkin is now one of the most eloquent champions of anarchistic communism, but is opposed to the so-called "active" Anarchists. "It would be wrong," he believes, "to cut the heads of one part of mankind in order to make the other part happy, and means should be found to give happiness to all without exception."

KRUGER, STEPHANUS JOHANNES PAULUS, the last president of the South African Republic, was born in Rastenburg, Cape Colony, October 10, 1825, moved to Natal and the north when a boy had become prominent among the settlers in the new country north of the Vaal. He was chosen a member of the Executive Council in 1872, and was a leader in the war with England in 1881. He was elected president in 1882, and re-elected in 1883, 1888, 1893, and 1898. His attitude to the Uitlanders

in the Transvaal brought about the intervention of Mr. Chamberlain in 1899, and his ultimatum of October 10 precipitated the war. His personality dominated affairs in Pretoria during the early months of the war; later he appeared on the battlefield on more than one occasion. Lord Roberts' advance into the Transvaal drove Kruger and his government to Machododorp, to Barberton, and then across the Portuguese border to Lourenço Marques. On October 19 he sailed on the Dutch man-of-war *Gelderland* for Europe, landed in Marseilles on November 22, and received a tremendous ovation there and on his way to Paris. (See FRANCE.) He was received by the authorities at Paris and the Chamber by vote extended to him and his people its sympathy. President Kruger disclaimed all political motive for his trip, saying he travelled simply for his health. On his way to Berlin he was informed that his presence at the German court would not be acceptable. He went to The Hague, where he was welcomed cordially by the government and deliciously by the people. He was still in Holland at the end of the year. See TRANSVAAL.

KUMASSI. See GOLD COAST.

KWANG HSU, Emperor of China, was born August 2, 1872. He succeeded to the throne upon the death of his cousin, the Emperor Tung Chi, January 22, 1875. His personal name, in distinction from his imperial title, Kwang Hsu ("Enduring Majesty"), is Tsai Tien. His father was Prince Chun, a brother to the Emperor Hien Feng, and his mother was a sister of Tsu Hsi, the present empress dowager. According to Chinese court customs, an emperor appoints as his successor a member of the royal family belonging to a younger generation than himself. But the Emperor Tung Chi died without appointing a successor, and Kwang Hsu, his cousin, then a child of three years, was chosen at the instance of the empress dowager, who thus schemed for a second period of regency.

The tutor selected for the young emperor was Weng-Tung-cho, an excellent man, through whose training Kwang Hsu became receptive to the new ideas. Kwang Hsu nominally assumed control of the government in March, 1887, and in February, 1889, he took full control. On September 22, 1898, an imperial edict announced that Kwang Hsu had resigned power to the empress dowager. But it appears that from the time of the emperor's enthronement Tsu Hsi had to a considerable extent retained control of the government. After the war with Japan a strong spirit of reform developed in China, and there was organized in Peking a reform club, composed of the young scholars who desired the promotion of foreign learning. Western ideas and studies and the progressive party that espoused them were favored by the emperor. In 1896, under the influence of Kang-Yu-Wei, a radical reformer, the emperor, by nature more impulsive than prudent, began the issue of a series of reform edicts whose spirit seemed to indicate the destruction of ancient traditions and institutions and the adoption of Western ideals. The official class foresaw the loss of their positions under this dawning régime and appealed to the empress dowager to put a stop to the revolutionary policy of their "madcap emperor." She seems to have been watching her chance and quietly spreading rumors that the emperor was unfit to rule: his health was poor and he had no heirs. It is said she heard that Kwang Hsu was arranging for her imprisonment; she then turned the tables on him and brought about the *coup d'état* of September 22, 1898. The imperial gazette announced that the emperor had found it impossible to deal with the vast number of administrative affairs, and accordingly had begged the empress dowager to resume administration of the government. Tsu Hsi imprisoned the emperor in his summer palace at Peking, but still made use of him for the signing of decrees. On January 24, 1900, she practically forced him to abdicate; a decree declared the son of Prince Tuan, Kuk Wei (whose official name is Pu Tsing), a child about 9 years of age, to be the true heir of the Emperor Tung Chi. For some reason, however, it appears that Kwang Hsu nominally remained emperor throughout 1900. He was married in February, 1889.

LABOR. See LABOR LEGISLATION; TRADE UNIONS; STRIKES AND LOCKOUTS; ARBITRATION, LABOR; FEDERATION OF LABOR, AMERICAN; WAGES; SOCIALISM; and INDUSTRIAL COMMISSION.

LABOR LEGISLATION. *Congressional Bills Affecting Labor.*—Several bills of much interest and importance to organized labor were introduced in the 56th Congress. Only two of them, however, secured passage. The first one, becoming law on March 31, 1900, directed the secretary of the treasury to prescribe and enforce regulations governing the boarding of vessels arriving at American seaports before such vessels had been properly inspected and placed in security. The object of this bill was to prevent "runners" for sailors' boarding-houses from boarding ships, inducing sailors to desert, and persuading them into making injudicious contracts. The second and more important bill was in the form of an amendment to the Hawaiian Government bill (see HAWAII, paragraph Hawaiian Legislation), and prohibited involuntary servitude in those islands. The congressional resolution

providing for an anti-trust amendment to the Constitution (see UNITED STATES, paragraph Trust Problem) was vigorously opposed by the American Federation of Labor, represented by their president, Samuel Gompers, and by their legislative committee. The reason for this opposition is as follows: The acting section of that resolution—"Congress shall have power to define, regulate, prohibit, or dissolve trusts, monopolies, or combinations, whether existing in the form of a corporation or otherwise." President Gompers stated that under this resolution, if enacted into a constitutional amendment, Congress would be enabled to overthrow labor organizations (combinations) as well as capitalistic organizations; and Congress would be much more likely to do the first than the second. To this end he believed that the resolution had really been introduced. In respect to the proposed amendment to the Sherman Anti-trust law (see UNITED STATES, paragraph Trust Problem), the legislative committee of the Federation of Labor reported to the association that as this law had been repeatedly used against labor organizations as being "combinations in restraint of trade," the committee had submitted the following proviso to the amendment: "Provided, that nothing in this act shall be construed so as to apply to trade-unions or other labor organizations, organized for the purpose of regulating wages, hours of labor, or other conditions under which labor is performed." This proviso was incorporated in the amendment, and the bill was passed by the House. It was then referred by the Senate to the judiciary committee, who had not reported it at the close of the session. Bills prohibiting injunctions in case of labor troubles and strikes were introduced in the House and Senate, but were not passed. These provided that agreements or combinations between two or more persons in furtherance and continuance of trade disputes should not be subject to indictment or restraining orders of the courts, nor should they be considered as in "restraint of trade," and, therefore, illegal, provided that they resulted only in such acts as would not be punishable if committed by one person. In January, 1900, the House passed what was known as the *Cœur d'Alene* resolution—a resolution to investigate the conduct of the United States Army and officers in Idaho. The testimony taken in accordance with this resolution by the committee on military affairs was concluded about the middle of May. Majority and minority reports were prepared by the committee, but not printed. From the reports of the press, however, it was thought that the majority found that there had been no violation of the law by any of the officials responsible for sending and keeping the troops in Idaho, while the minority found that there had been violations of the law. The legislative committee of the American Federation of Labor, who heard a large part of the testimony, were convinced from the hearings that the *habeas corpus* had been unwarrantably suspended, that martial law had been unduly continued, and that "citizens by the hundred had been arrested without warrant, and kept in prison, many for a period of six months without any hearing and without any indictment." On May 21 the House passed bills to "protect free labor from prison competition" and to "limit to eight hours the daily services of laborers and mechanics." The latter bill provided that in every contract to which the United States was a party there should be a clause stipulating that no laborer or mechanic should be required or permitted to work more than eight hours per day. The immediate passage of this bill was especially urged by labor representatives, because of the large contracts for ship-building which it was expected that Congress would authorize before the close of the session (see UNITED STATES, paragraph Navy). The Prison-labor and Eight-hour labor bills having passed the House, were reported to the Senate on May 22, and referred to the committee on education and labor. Strenuous efforts were then made to have them either taken out of committee or reported by the committee, but without avail. They had not been reported back to the Senate when Congress adjourned. In commenting upon this and other bills which they had hoped to see passed, the committee of the American Federation of Labor remarked: "It is worthy of note that when they (the bills referred to) passed the House they were buried in the Senate, and when they passed the Senate they were, with one exception—the abolition of slavery in Hawaii—buried in the House."

State Legislation.—In the matter of relations between employer and employee and protection of workmen's life and health against dangerous machinery and unsanitary conditions, Massachusetts has always led the way for the other States in the Union; but in other States a good deal has been accomplished, and the following are the enactments for 1900 in the various States:

Massachusetts.—1. Making it unlawful for employers of labor on public work to require their employees to board or trade with certain persons. 2. Amending the Employers' Liability law of 1887, which enabled the employee to recover damages from employer by giving notice within thirty days of accident, to read sixty, instead of thirty; and extending in a similar way the limit for giving notice for the executor in case of death of the employee. 3. Extending the provisions of the law of 1894 requiring weekly payments of wages to skilled and unskilled workmen in the employ

of the State. 4. Providing that the hours of labor of employees in county jails and houses of correction shall not exceed sixty hours per week. 5. Amending the law of 1894 as to hours of labor of minors under 18 and women employed in mercantile establishments by fixing the maximum limit at fifty-eight hours per week, instead of sixty, as heretofore, excepting, however, retail shops during December. 6. The law of 1899 as to hours of labor for city and town employees was amended by providing that all such laws be submitted on petition to vote for acceptance.

New York.—1. Amending the law of 1897, which limited the hours of labor to eight per day for State employees by exempting engineers, electricians, and elevator men in public buildings during the session of the Legislature. 2. After considerable agitation on the subject of the long hours required of employees in pharmacies, which was recognized as a danger to public health on account of the resulting errors in compounding prescriptions, a law was passed, limiting the hours of labor of drug clerks "in cities of 1,000,000" (which means Greater New York) to seventy per week; employers are, however, allowed to employ their clerks for six hours overtime on the condition of deducting those hours the succeeding week; the law has been considered a dead letter from the day of its enactment, and treated accordingly by the druggists. 3. Law of 1897 amended by requiring employers to provide seats for waitresses in hotels and restaurants.

Ohio.—1. Law passed requiring necessary guards for machinery in factories and workshops and empowering the factory inspector to order and enforce the necessary changes. 2. Amending law of 1897 by prohibiting employment in mines of children under 14 years and of those under 15 years during the school term. 3. Limiting the hours of work for State and local employers to eight per day, and extending the provision to workmen on all public works sublet to private contractors.

Iowa.—1. Amending the Code of 1897, ch. 9, t. 12, by requiring foremen, pit bosses, and hoisting engineers to be examined and hold certificates of competency. 2. Prohibiting miners from demanding payment for slack found with coal.

Georgia.—Making it a misdemeanor for employers to counterfeit union cards or labels, and for employees to counterfeit letters of recommendation from employers.

Louisiana.—Requiring the provision of seats for female employees and not less than thirty minutes for meals. For additional information on labor legislation, see articles on the various States.

There was little new legislation during 1900 creating State Bureaus of Labor, since there is hardly an industrial State in the Union which has not been provided with such a bureau within the last decade. New bureaus remain to be created only in the Southern and a few comparatively unimportant Western States. Of the former, Louisiana is among the first to create the office of commissioner of statistics of labor. He is to be appointed by the governor for a term of four years, is to issue an annual report, have the power of examining witnesses under oath, and is to receive a salary of \$1500 per annum. Massachusetts and New Jersey passed enactments modifying certain details in the management of their bureaus of labor.

The following laws were declared unconstitutional in 1900:

California.—Law of 1897 requiring corporations to pay their employees monthly; reason, class legislation.

Colorado.—Law of 1899 making eight hours a legal work-day for miners, except in emergency; reason, class legislation.

Kansas.—1. Law of 1897 making it unlawful to pay wages in any other but lawful United States money or bank checks; reason, denies equal protection of laws. 2. Law of 1898 creating a Court of Visitation, composed of three elective judges, empowering the latter in the case of a strike which appears just to order the road to resume operations, and on failure of the road to comply with the order to appoint a receiver therefor; unconstitutional, because conferring on the court legislative, executive, and judicial powers.

Illinois.—Law of 1891 making miners' death or injury in mine a cause for action where manager has no certificate of competency, as called for by act; unconstitutional, because it treats of matter not included in title.

Foreign Legislation.—The following is a summary of the labor legislation in foreign countries, based on the accounts given in the English *Labor Gazette*:

Canada.—"An act to aid in the prevention and settlement of trade disputes and to provide for the publication of statistical industrial information," is the official title of a law enacted by the Canadian Legislature in 1900. The law provides: 1. For conciliation and arbitration in trade disputes. It is not compulsory, and follows the general lines laid down in a similar law in the United Kingdom. 2. For the establishment of a Department of Labor, to be under the charge of a ministry to "collect, digest, and publish in suitable form statistical and other information relating to the conditions of labor, to institute and conduct inquiries in the important industrial questions on which adequate information may not at present be available, and to issue, at least once in every month, a paper, to be known as the *Labor Gazette*,

which shall contain information regarding conditions of the labor market and kindred subjects."

Belgium.—A law has been passed by the Belgian Parliament amending the previous law as to old-age state pensions. According to the new provisions, pensions are to be granted: 1. To those buying an old-age pension from the National Superannuation Fund through a recognized friendly society, provided their annual payments on that account do not exceed 60 francs (\$12). 2. To all other persons buying their pensions directly from the National Fund, whose payment of their state taxes does not exceed 50 francs per annum, in places where there are less than 10,000 inhabitants, and 80 francs in cities where there are 50,000 inhabitants or more. The pension is not to fall due before the age of 55 years. In addition to the payment which the beneficiary contributes to the National Fund, the state pays a bonus equal to 60 per cent. on annual dues not exceeding 15 francs, the payment of bonus by the government ceasing when the total sum standing to a man's credit with the National Fund is sufficient to purchase him a pension of 360 francs (\$72) per annum, commencing at the age of 65. The law provides also that all Belgians who are or have been working people who shall have reached the age of, at least, 58 years on January 1, 1901, shall receive an annual pension of 65 francs upon reaching the age of 65.

Denmark.—A law of April 3, 1900, establishes a system of state insurance against accidents for fishermen. The insurance is not compulsory, but the terms are such as to tempt every fisherman who works for wages to avail himself of the provisions of the law. The annual premium to be paid by the insured is \$1.40; and if the fisherman works for an employer who does not do any work himself, the latter is obliged to pay the premium for his employee. Any deficit which may arise in the National Fund from the claims of the insured is to be covered by the public treasury.

France.—The law of March 30, 1900, is an amendment of the law of 1892 fixing the hours of labor for women and children. They are to be eleven per day until April 1, 1902. From that time until April 1, 1904, the hours are to be ten and a half and after that date ten hours. At least one hour is to be allowed for rest. It prohibits the employment of women and minors under 18 years of age between the hours of nine P.M. and five A.M. Where shifts of labor are employed the law requires each shift to be employed continuously, except for the period of rest. Where adult males are employed with women or minors, their hours shall be the same as for the latter.

A decree of the minister of commerce, dated September 17, 1900, provides for the establishment of labor councils in all industrial centres in France, whose duties shall be as follows: (a) To express their opinion, at the request of the parties concerned or of the government, on all labor questions. (b) To assist in the investigations ordered by the government at the request of the Superior Council of Labor. (c) To draw up a list of current wages and hours for each district, endeavoring where no agreement between employers' associations and trade-unions exists to secure such an agreement. (d) To report to the public authorities on the best means of dealing with want of employment. (e) To make an annual report on the administration of the factory acts, etc., with recommendations as to any amendments required.

The councils are to be divided into sections, each dealing with one trade or group of allied trades, and composed of representatives of employers and employees in equal numbers, elected by their respective organizations. These councils are to act also as Boards of Conciliation and Arbitration. *SEE FRANCE.*

Germany.—A law guaranteeing freedom of combination to trade and labor unions, passed December, 1899, went into operation in 1900. All laws to the contrary previously in force in any state of the empire have been repealed. The Federal Council of the empire issued on February 6 special rules to regulate sanitary conditions in zinc-distilling and zinc-roasting establishments, which are considered dangerous to the health of those employed in them. The employment of women is allowed only in connection with certain of the processes, and that of children is prohibited entirely. The rules call for bathing facilities, dressing and dining rooms, and employment of a physician approved by the factory inspector. By a proclamation of the Federal Council of the empire, dated July 13, 1900, the rules of the Industrial Code Amendment law, 1891, heretofore applicable to factories, are now extended to workshops using machinery driven by mechanical power. The rules, taking effect on January 1, 1901, are as follows: 1. No children below the age of 13 are allowed to work. 2. Children above that age are allowed to work only if they have completed their elementary education. 3. The hours of labor are limited for children under 14 years of age to six per day; for children from 14 to 16 years of age to ten per day; for women to eleven per day and ten on Saturdays and eves of holidays. 4. Women and minors are not allowed to do night-work—that is, between the hours of 8:30 P.M. and 5:30 A.M.—nor to work on Sundays. 5. Women are not allowed to work for a period of from four to six weeks after childbirth. The law contains detailed

instructions to the inspectors for the enforcement of the rules, and enumerates the cases in which exceptions to the above rules may be allowed.

The Accident Insurance law was amended June 30, 1900. The amendment is designed to broaden the scope of the old law. The limit of annual earnings below which insurance is made compulsory is raised from \$500 to \$750; the number of occupations coming within the scope of the law has been increased by adding the industries of brewing, transportation, timber felling, and those engaged in blacksmithing, locksmithing, and window cleaning, and butchers. The employee is now entitled to benefits, not only in case of accidents occurring to him while engaged at his trade, but also for those received by him while performing any service for his employer. The sum paid in case of total disablement is raised to the full amount of his earnings, as against two-thirds, as was the case before. Similarly, the amounts allowed for funeral expenses and to the members of the family in case of death of the insured are also increased. The full text of the new law has been published in the official *Reichs Gesetzblatt* for 1900, No. 26.

On November 28, 1900, the Federal Council issued rules providing for seats for clerks employed in mercantile establishments. The rules, which take effect April 1, 1901, are elaborate in detail to insure the employees the use of the seats at all hours, except when sitting would interfere with the performance of their duties.

A law passed by the Prussian Diet, July 9, 1900, authorizes the government to expend the sum of \$1,250,000 for the purpose of constructing improved dwellings for working men and lower-grade officials in the employ of the government. This is the second appropriation by the same authority, the first having been made in August, 1895.

The Bavarian government has fixed the length of the working day for its employees in the ordnance factory at nine and one-half hours per day. In the little duchy of Anhalt a law went into effect April 16 which threatens with imprisonment and heavy fines any agricultural laborer or laborers who may refuse to work for their employers before the expiration of their contract. Still heavier fines and imprisonment are provided for those guilty of incitement to strike under similar circumstances and for any employer who may engage agricultural laborers, knowing that they have illegally refused to work for another employer. Finally, the penalty of imprisonment for a year is incurred by those who enter upon a strike to force their employer to modify the terms of an existing contract.

The senate of the city of Lübeck has issued a decree prohibiting picketing under the penalty of a fine of 150 marks (about \$35) or imprisonment.

Great Britain.—The following laws have been enacted in that country during 1900:

1. *The Railway Employment (Prevention of Accidents) Act.*—This law empowers the Board of Trade to issue rules and regulations in connection with any part of railway service and equipment for the prevention of danger to life and limb. Aside from issuing general rules, the board may issue specific orders, demanding the introduction of any plant or device, or the discontinuance of old ones for the objects above stated. It has the right to inspect the railways at any time, and may appoint as many officers as it thinks necessary to carry the law into effect. Appeal may be had from the action of the board to the railway commissioners.

2. *The Workmen's Compensation Act of 1897* is extended to agricultural laborers.

3. *Mines (Prohibition of Child Labor Underground) Act* has been amended so as to prohibit the employment of children under 13, instead of under 12, as had been the case before.

4. Section 4 of the Elementary Education act of 1880, prohibiting the employment of children under 13, unless they had a school certificate to the effect that they had completed their elementary education, has been amended by raising the age to 14.

Hungary.—A very drastic law, regulating the relations between employer and employee, took effect January 1, 1900. It relates only to workmen employed on various kinds of earthwork; but as the provisions of the law are practically the same as those affecting agricultural laborers in force since January, 1898, the law may be said to apply to all workmen engaged in outdoor work. Every working man coming within this category is required to provide himself with a certificate from the legal authorities, without which he cannot be engaged by any employer; the certificate is kept by the employer while the workman is working for him. All engagements, except those made for very short periods, must be made by written contract, and the violation of the same by the workman is subject to severe punishment by fine and imprisonment. An employer engaging a workman without a certificate or with the knowledge that he is engaged by another employer, or inducing a working man to quit another employer, is punished by fine. The employer has the right to call upon the public authorities to take his men to work by force if they refuse to work by their own consent. Incitement to strike or intimidation of those

who wish to take the strikers' places is punishable by heavy fines and imprisonment. The truck system is prohibited.

A system of insurance for agricultural laborers against accidents and for old age goes into effect in Hungary on January 1, 1901, a law to that effect having been passed by the Hungarian Legislature in June, 1900. A laborer is to be entitled, in case of accident, to free medical attendance and medicines and 20 cents per day, to continue for sixty days, after which the laborer is considered invalided. Invalids are to receive the monthly sum of a little over \$2. In case of death from accident the family of the deceased is to get a sum equal to about \$85. Upon reaching the age of 65 years the insured is to get the sum of \$21, provided he has not drawn any accident benefit during the entire time of his insurance; the receipt of the sum does not deprive him of the other benefits of the fund. In case of death not caused by accident the family of the deceased is to get from \$41 to \$60, according to the length of time he had been insured. The payments to be made by the laborers are 40 cents entrance fee and 4 cents weekly dues; by paying 2 cents a week a laborer is entitled to one-half the regular benefits. The right to insure after the first five years of operation of the law will be limited to those between the ages of 14 and 35. All deficits are to be covered by the state. The administration of the fund will be in the hands of local boards, composed of representatives of employers and employees and delegates of the county council, under the general control of the Hungarian government.

New Zealand.—An act dated August 16, 1900, provides that in all public works, local or state, the contractor shall be obliged to pay a fair rate of wages, according to local standards; that all hours of labor in excess of eight per day shall be considered over-time, for which a correspondingly higher rate is to be paid. No worker is allowed to contract himself out of the conditions of the act.

Russia.—A law dated November 4 amends the rules governing the supervision of boilers in mines. It restricts the number of boilers which may be attended to by one man to two where the fuel is coal or wood, to four where it consists of naphtha, and to five if gas is used. In addition, it provides for a superintendent for every five boilers in use in the mines.

Spain.—A new Employers' Liability law went into effect during 1900. It is very elaborate, and its chief provisions are as follows: 1. Temporary disablement. The injured is to be entitled to free medical attendance and medicines and to a sum equal to one-half his wages during the entire time of disablement. If the disablement lasts more than a year, it is considered as permanent under the law. 2. Permanent disablement. Under that head two cases are foreseen: (a) Total disablement, in which case the employer is to pay the workman a sum equal to from one and a half to two years' wages. (b) Partial disablement, when the employee is entitled to one year's wages, unless the employer finds him an equally remunerative work at some other occupation. 3. In case of death the employer is to pay the funeral expenses and compensate the family of the deceased either by paying them a large sum or by an annuity. In the former case the sum varies from seven months' wages (for parent or grandparent) to two years' wages (for widow and children). In case an annuity is decided upon, it is equal from 10 to 40 per cent. of the wages received by the deceased. As an alternative the employer may insure his men with any insurance office approved by the government under condition that the entire cost of insurance is to be borne by him, and the amount insured to be not less than that prescribed by the law. All contracts with workmen to the contrary are null and void.

A law regulating the employment of women and children was passed March 13, 1900. By the terms of that law children under 10 years of age are not allowed to work. If able to read and write, they may be employed at 9. Children under 14 years are not allowed to work for more than six hours per day in factories or eight hours in commercial establishments. At least one hour must be allowed for rest in either case. If a child has not received an elementary education, two hours per day must be allowed for school attendance; and if the school is more than two kilometres (one and one-third miles) distant, a factory employing more than twenty children must maintain its own school. Children under 16 years are not allowed to work under ground or in establishments using inflammatory material or at any dangerous trade. No work is allowed on Sundays and holidays for women and children. The law creates local and provincial councils, to be appointed by the government. The local councils are to consist of an equal number of employers and employees, a civil officer, who is to act as chairman, and a member of the clergy. Members of the council are to inspect all places where labor is employed, in addition to the factory inspectors; to hear complaints submitted to them either by the employers or employees; collect labor statistics, and, in general, take steps toward the enforcement of the law. The provincial councils are to consist of representatives of the local councils and the governor of the province, who is to

act as chairman. Each provincial council is to have an expert in matters of health and safety in factory establishments, who is to be nominated by the Royal Academy of Medicine. The council is to act upon all matters submitted by the governor. Both the local and provincial councils are empowered to recommend such legislation as will insure an eleven-hour day for all persons mentioned in this law who may be working longer hours at present.

Switzerland.—A new Compulsory Arbitration law was passed by the canton of Geneva, and took effect March 21, 1900. It provides for legal recognition of employers' associations and trade-unions, subject to the following three conditions: The constitution of an organization must not contain any rules inimical to the laws of the state, it must be subject to revision on the demand of a majority of the members, and must guarantee the right to join the organization to every member of the trade. There are three stages provided for negotiation in case of disagreement between employer and employee:

1. Negotiation. Separate meetings are to be called by the employers' associations and the trade-unions to elect an equal number of delegates to a joint meeting. In the absence of an employers' or labor organization, the council of state calls the meeting at the request of one-fifth of the respective members entitled to vote for the election of *prud'hommes*.* The joint meeting settles the question by a majority vote of not less than three-fourths of all the delegates.

2. Conciliation. In case of failure to agree, the council must appoint one or more conciliators from its own members upon the demand of either party to the controversy. The conciliators call a new meeting of the delegates and try to effect a settlement again by a vote of three to one. If that fails,

3. Arbitration is called for. The conciliators inform the central committee of *prud'hommes*, who must summon the delegates to a new meeting within six days, and the meeting, which is now composed of the delegates from both sides and the *prud'hommes*, effects a settlement by a simple majority vote. The terms once settled, neither party to the agreement is allowed to break it during the period for which a settlement has been made, and instigations to strike under such circumstances are punishable under the law. See also INDUSTRIAL COMMISSION and WAGES.

LABUAN. See BORNEO.

LACROSSE. The national Canadian game continued to grow in interest in this country during 1900. The Crescent Athletic Club again proved the strongest American team, defeating all the college teams and two strong twelves from the Dominion, although two other Canadian teams lowered the club men's colors and prevented them from showing the clean record which they had to their credit at the close of the season of 1899. In the Inter-University Lacrosse League, composed of Columbia, Cornell, Harvard, and Pennsylvania (admitted 1900), the championship, won in 1899 by Cornell, was undecided in 1900. On the record of games among the four honors seem to be about evenly divided. In the Intercollegiate Lacrosse Association games, played between Stevens Institute, Johns Hopkins, and Lehigh University, Johns Hopkins, still probably the strongest college team of the country, once more won the championship. With the growing interest in lacrosse among the colleges it is to be hoped that these two associations may in time become amalgamated, and include good lacrosse colleges now unrepresented in either organization, such as Hobart, Swarthmore, and the College of the City of New York. New York University also, which was the first college to play lacrosse, and which at the present time has no team, should appear in an intercollegiate series. The claims of this sport are gradually gaining recognition, and in a few years the game, with its present growth, should become popular not only throughout the East, but among the clubs and colleges of the Middle West. An interesting event of the season was a tour made by an Indian team from the Six Nations of Canada, which defeated Hobart 6 to 1, Cornell 6 to 1, and the Staten Island Lacrosse Club 13 to 3, and lost to Stevens, 4 to 6. Lacrosse is a legacy to modern sportsmen from the Indians themselves, and is the only field game which has sprung directly from American soil. After years of endeavor on the part of its adherents it has at last gained a firm foothold also across the Atlantic in England. Thus Americans have paid in part the debt which they owe for the many field games imported from the Old World. It is reported that many of the best class of British players are now leaving football, which in Great Britain is being injured by professionalism, and joining the growing ranks of lacrosse players. See SPORTS.

LADRONES, or MARIANNE ISLANDS, a group of islands in the Pacific

**Prud'hommes* are arbitrators, consisting of an equal number of employers and employees, elected for a certain period of time by their peers to act as judges in trade disputes. They have all the powers of a court, with the difference that they are not professional lawyers or judges, and that no lawyers are allowed to plead before them for either side.

Ocean between 13° and 21° north latitude and 145° and 146° east longitude. The islands are divided into two groups, and consist of the four larger islands, Guam (*q.v.*), Rota, Finian, Saipan, and several others of less extent. The entire area of the group is estimated at over 400 square miles, and the population at about 10,000. The islands, with the exception of Guam, which was ceded to the United States in 1898, were sold, together with the Caroline and Pelew islands, by Spain to Germany in October, 1899, for the sum of 16,750,000 marks. The capital of the group is Saipan, and the islands administratively belong to the German New Guinea Protectorate. The islands are mostly volcanic, sparsely populated and of very little commercial importance. The climate is not unhealthful, but the soil is not adapted for agricultural purposes. The natives are allied to the Tagalos of the Philippine Islands and are supposed to be of a mixed Tagalo and Chamorro origin.

LAGOS, a British crown colony in West Africa lying on the Bight of Benin between Dahomey (French) on the west and the Niger Coast Protectorate (British) on the east. The area is 985 square miles, and the population upward of 85,000. The hinterland of the colony consists of the British protectorate of Lagos, the boundaries of which were so defined in December, 1899, that its present area is estimated at over 21,000 square miles and its population at about 3,000,000. With the exception of about 12,000 Mohammedans and 6000 Christians the inhabitants are pagans, but successful missionary work is being accomplished. The town of Lagos is the largest on the West African coast, its inhabitants numbering about 40,000. It has an excellent harbor. In the interior are a number of large cities, Abeokuta and Ibadan having, it is said, about 150,000 and 180,000 inhabitants respectively; the reported population of Ogbomisho is 30,000, Oyo 60,000, and Ilorin 70,000. The last-named city is situated in Northern Nigeria a few miles beyond the Lagos boundary. The colony is administered by a governor (Sir William MacGregor since 1899), who is assisted by an executive and a legislative council. Besides a police force of about 350 men the colony had a force of Hausa constabulary numbering about 850. Revenue and expenditure in 1897 amounted to £177,421 and £182,669 respectively; in 1898, revenue, £206,444, and expenditure, £203,802. The most important products are rubber, palm oil, and palm kernels; other products and exports are ivory, gum copal, cotton, cacao, coffee, and timber. The principal imports are alcoholic liquors, tobacco, cotton textiles, and hardware. In 1897 the imports were valued at \$3,740,638 and the exports at \$3,046,000; in 1899 the imports and exports amounted to \$4,704,000 and \$4,457,000 respectively. The trade is chiefly with Great Britain.

Late in 1900 it was announced that the railway connecting the port of Lagos with Ibadan by way of Abeokuta was about to be opened for traffic. The road, which was begun in 1896, is 126 miles long and of 3 ft. 6 in. gauge; it has a number of noteworthy bridges, one of which is 900 feet and another 2000 feet in length. The further extension of the line to Ogbomisho, Ilorin, and the Niger is under consideration. It is also said that Mr. Chamberlain, the British secretary for the colonies, is considering the construction of a line for the benefit of Hausaland in the Niger territories.

LAMARCKISM. See ZOOLOGICAL LITERATURE.

LAMSDORFF, Count, was appointed in the autumn of 1900 to succeed Count Muravieff as foreign minister of Russia. Count Lamsdorff was born in 1838 and is the great-grandson of the tutor of Emperor Paul I. He entered the Ministry of Interior in 1866 and became first secretary of the Foreign Office in 1875. Three years later he accompanied Prince Gorchakoff to the Berlin Congress. He then held in turn the offices of director of Chancellery and senior councillor of the Foreign Office and assistant foreign minister.

LANDSCAPE GARDENING. See HORTICULTURE.

LANDS, PUBLIC. Much of the public domain of the United States has included lands of wonderful fertility, and the policy of granting to States and individuals only such of the arid lands as they might be willing and able to reclaim has been instrumental in developing irrigation and opening up additional sections to cultivation and settlement. By withholding its lands, in the main, from corporations, the United States has protected the rights of its individual citizens, and the results have been the development of emigration and the peopling of the great western plains with a nation of landowners. Nearly the whole trans-Mississippi country, when it came into the government's possession, was a region unexplored, and occupied for the most part by tribes of Indians. Its settlement was hastened unquestionably by the discovery of gold in California, but the credit of building up the West is chiefly due to the national land policy. The Homestead act induced settlement; land grants to railroads connected the West with the East; the reservation of school tracts provided a stimulus to emigration by insuring the means of offering secondary education, and the location of land scrips, laid the foundation for the great Western State universities, among which those of Michigan, Minnesota, Wis-

consin, Illinois, Indiana, Nebraska, California, and several others are notable American educational institutions. Only in the management of its forests, in which there has been the greatest carelessness, has this country fallen behind. Within the past ten years, however, a more enlightened policy in this regard has been pursued. The United States obtained a common public domain almost at the beginning of its existence by the cession to it on the part of the various original thirteen States of the vast regions, reaching westward to the Mississippi, which were claimed by them as a part of their own territory. Successive additions of land brought the limits of the country to the Pacific, with the great area of Alaska in the northwest. The whole of this domain has since been erected into States and Territories, but over 1,000,000,000 acres, mostly in the West, still remain under the control of the general government.

Disposal of Public Lands.—The early steps toward the disposal of public lands were tentative, and the present system is the result of various experiments. At first an attempt was made to make the public lands the basis of a scheme for financing for the benefit of the government. In time, however, there grew up the policy of gradually disposing of the national domain for the benefit of the people directly. At the present time it is disposed of principally by cash entry (public auction or private sale); homestead entry (by which a tract not exceeding a quarter-section, or 160 acres, may now be had on the payment only of certain nominal fees, the title passing to the settler after he has resided upon and cultivated the land for a period of five years); desert land entry (whereby a settler by instituting irrigation may take up a tract of 320 acres); mineral land entry, school grants, railroad grants, and grants to States for educational and other institutions. Two forms of entry were withdrawn in 1891: the pre-emption entry and the timber-culture entry, but claims previously initiated are allowed to be perfected. Pre-emption is the exercise of a right by a person who has settled and improved public land, not exceeding 160 acres, to obtain title to such in preference to any other person by entry and purchase at government rates whenever the land may be offered for sale. By the Timber Culture act the settler might, by planting trees on 10 acres, receive 160 acres free at the end of three years.

Survey of Public Lands.—In order to facilitate the disposal and management of its public lands the United States carries on an annual survey, and all public lands, before being disposed of—i.e., before title passes—must be surveyed. This survey is based upon what is known as the "rectangular system." The public domain is divided into "townships" of six miles square, which are subdivided into numbered "sections" of one mile square, or 640 acres. The simplicity of the system has recommended its use, which has continued for over a century. Up to June 30, 1900, 1,101,831,641 acres of the public lands had been surveyed, of which 737,658,178 acres had been disposed of. During the fiscal year ending on that date the amount of land surveyed (and survey accepted) was 7,567,282 acres, in 14 States and Territories, through an appropriation of \$325,000, of which \$75,000 was set aside for field examinations. The largest areas surveyed were in North and South Dakota (each above 1,000,000 acres), Montana, Idaho, Utah, Wyoming, Washington, Oregon, and Nevada, and the smallest in Florida (46 acres), and Alaska (939 acres). The rectangular system was extended to Alaska only in 1899. The amount of vacant public lands in the United States on June 30, 1900, is shown in the table on the following page, and it may be explained that area reserved means land reserved from disposal for any purpose whatsoever, and area appropriated means lands embraced in selections, filings, and entries, and also the area of lands granted for school purposes. The total present area of the public lands may be stated to be approximately 1,071,881,662 acres, of which 917,135,880 acres are undisposed of, and 154,745,782 acres reserved for various reasons.

Lands Disposed of in 1899-1900.—During the fiscal year ending June 30, 1900, 13,453,888 acres were disposed of, or about 4,271,475 acres more than during the preceding 12 months. Of this land, 1,178,982 acres represented cash sales, and 12,212,482 acres miscellaneous entries, such as homestead, timber culture, land warrant, scrip, State, swamp-land, and railroad and wagon road selections, Indian allotments, etc. Of the 12,000,000 odd acres of miscellaneous entries, 8,478,409 acres were original homestead entries, an increase of 2,300,822 acres. There was also a large increase during the year in the acreage of final homestead entries. There was a reduction in the pre-emption and timber-culture entries owing to the repeal of the laws covering those entries. During the fiscal year the amount of land certified or patented on account of railroad grants was 1,277,573 acres, an increase of 772,921 acres over the preceding year. The report of the General Land Office shows that material progress has been made in the examinations necessary to the adjustment of railroad land grants. Twenty-eight railroads were given rights of way over the public lands during the fiscal year, and a somewhat greater number of rights of way were approved for canals and reservoirs. Under the State Desert Segregation act, ceding irrigated public lands to the State where the State has performed the work, 3855

acres were given to Wyoming, and a list aggregating 54,006 acres, filed by Idaho, was approved. The year was marked by the beginning of the development of the petroleum industry in southern California, and practically all public lands containing any indication of petroleum have been located as mineral land. In the mineral division of the General Land Office 1415 mineral and mill-site patents were issued on 2820 claims. This was a decrease for the year of 297, mainly due to a large increase in the number of suspensions, notably in Colorado and Montana, which suspensions are attributable to various late rulings of the secretary of the interior. Actually there was an increase in the mineral exploration of the year. Of coal patents, 69 were issued, an increase of 31, and against the decrease in mineral and mill-site patents 1618 entries are recorded, a gain of 212. Great interest in the mining industry was shown in all the mining States and Territories. The general land commissioner stated in his report for 1898-99 that no mining claims had been received from the Yukon country in Alaska, but that another year would disclose whether or not the miners are desirous of proving up, paying for, and acquiring title to their claims. He reports for 1899-1900 that a negative answer must be returned if the actual making of mineral entries be taken as a guide; nevertheless, he states 80 applications for mineral surveys were made during the year to the surveyor-general of Alaska, and 54 practical surveyors have received appointments as United States mineral surveyors for that district. 26 of whom are located at Nome.

STATE OR TERRITORY.	Area unappropriated and unreserved.			Area reserved.	Area appropriated.
	Surveyed.	Unsurveyed.	Total.		
	Acres.	Acres.	Acres.	Acres.	Acres.
Alabama.....	359,250		359,250	55,880	32,344,799
Alaska.....	(*)	359,492,700	359,492,700	8,610,980	
Arizona.....	16,886,745	39,400,241	56,286,986	16,798,146	5,707,188
Arkansas.....	3,433,444		3,433,444	2,580	30,047,676
California.....	34,425,923	8,043,589	42,469,512	16,011,279	41,491,129
Colorado.....	35,134,613	4,515,634	39,650,247	5,490,001	21,207,312
Florida.....	1,438,749	157,062	1,595,811	19,259	53,456,370
Idaho.....	11,722,541	31,664,163	43,386,694	1,742,609	8,263,367
Illinois.....					35,842,500
Indiana.....					23,950,400
Indian Territory.....				19,658,680	
Iowa.....					35,646,080
Kansas.....	1,196,900		1,196,900	937,875	69,197,945
Louisiana.....	577,246	65,018	642,264	1,474,834	27,158,302
Michigan.....	430,483		430,483	90,396	36,238,331
Minnesota.....	2,306,216	2,309,908	4,616,124	5,012,293	41,479,579
Mississippi.....	283,804		283,804		29,899,214
Missouri.....	337,946		337,946		43,457,294
Montana.....	18,546,146	49,416,911	67,963,057	11,511,531	14,119,012
Nebraska.....	9,798,688		9,798,688	69,902	39,385,688
Nevada.....	29,622,658	31,654,848	61,277,506	5,963,409	8,075,726
New Mexico.....	41,951,028	14,589,542	56,540,570	5,967,412	15,980,218
North Dakota.....	12,597,130	6,128,109	18,725,239	3,370,291	22,814,500
Ohio.....					96,082,720
Oklahoma.....	5,733,573		5,733,573	7,203,430	11,397,269
Oregon.....	23,489,861	10,888,046	34,377,907	5,500,821	21,394,714
South Dakota.....	11,612,943	317,806	11,930,749	12,909,822	24,365,769
Utah.....	10,019,262	32,948,189	42,967,451	5,467,668	4,098,321
Washington.....	5,237,302	5,888,561	11,125,863	12,364,791	19,254,296
Wisconsin.....	313,515		313,515	365,353	34,595,963
Wyoming.....	43,194,311	5,163,838	48,358,149	8,046,280	6,028,865
Grand total.....	514,590,965	602,541,915	917,132,880	154,745,782	737,638,173

* The unreserved lands in Alaska are mostly unsurveyed and unappropriated.

The Public Forests.—By the protection of the public forests from indiscriminate lumbering, fires, and other injurious agencies or influences, the government aims to insure a woodland covering for important watersheds, to preserve the timber supply, to maintain those meteorological conditions supposed to be created by the presence of extensive forests, and in other ways to maintain the forests for the benefit of the whole community rather than for the individual. In consequence there have been set aside from the public forests within the past ten years 39 reserves, embracing an estimated area of 46,828,449 acres. The United States Department of the Interior had for some twenty years before the creation of the first of these reserves been emphasizing the need of a national forestry policy and system, but it was not until 1891 that the President received authority to set aside such lands, and it was not until 1897 that provision for the administration of these reserves was brought about. The latter result is largely due to the National Academy of Sciences, which, at the request of the secretary of the interior, undertook an investigation upon the subject of a national forest policy for the forested lands of the United States, and brought the matter prominently before the public. Upon this forest administration depends the whole efficiency of the reserve system.

It will be seen that a national forestry system is of a very recent period. Already it has been well advanced, and the opposition of the West has in a large measure given way to petition, or at least to co-operation, in the matter of establishing reserves and national parks.

Action of the Year Regarding Forest Reserves.—One reserve was created during the fiscal year, the Santa Ynez, a tract of 145,000 acres in the mountains of that name along the California coast, upon the petition of the neighboring coast towns for the protection of the water supply, an absorbing and serious question in California. Two existing reservations were enlarged: the Prescott Forest Reserve, in Arizona, from 10,240 acres to 423,680 acres, and the Big Horn Forest Reserve, in Wyoming, from 1,127,680 acres to 1,180,800 acres. Both enlargements were made on petition, the first in order to save the timber for the use of the immediate community, and to protect the watersheds of the Verde, Salt, and Gila rivers, and the second for treatment of timber. One reserve, the Olympic Forest, in Washington, was reduced by about 264,960 acres, eliminating large areas of agricultural lands. Four withdrawals have been made, as follows: Timber lands covering watersheds in the Santa Catalina Mountains, Ariz.; forests protecting the head waters of Newlan Creek in Fremont and Custer counties, Col.; a strip of timber land bordering the Bitter Root Forest Reserve, Mont., and forest lands about Cedar Lake, Wash., for the conservation of the water supply of Seattle. A proposed Crow Creek Forest Reserve, in Wyoming, also withdrawn from use, was later created (October 10, 1900) after the publication of the General Land Office's report for the year ending June 30, 1900. This is added to the following table of existing forest reserves, taken from that report:

STATE OR TERRITORY.	Name of Reservation.	Date of proclamation creating reservation.	Present estimated area in acres.
Alaska.....	Afognak Forest and Fish Culture Reserve. (Reserved under Secs. 24 and 14, Act Mar. 3, 1891.)	Dec. 24, 1892	403,640
Arizona.....	Grand Canyon Forest Reserve.....	Feb. 20, 1893	1,851,520
	The San Francisco Mountains Forest Reserves.....	Aug. 17, 1898	975,360
	The Black Mesa Forest Reserve.....	do.....	1,658,880
California.....	The Prescott Forest Reserve.....	May 10, 1898	423,680
	San Gabriel Timber Land Reserve.....	Oct. 21, 1899	555,520
	Sierra Forest Reserve.....	Dec. 20, 1892	4,096,000
	San Bernardino Forest Reserve.....	Feb. 14, 1893	737,280
	The Trabuco Canyon Forest Reserve.....	Feb. 25, 1893	109,920
	The Stanislaus Forest Reserve.....	do.....	691,200
	The San Jacinto Forest Reserve.....	Jan. 30, 1899	737,280
	The Pine Mountain and Zaca Lake Forest Reserve.....	Feb. 22, 1897	1,844,594
	The Lake Tahoe Forest Reserve.....	Mar. 2, 1898	136,335
	The Santa Ynez Forest Reserve.....	June 29, 1898	145,000
Colorado.....	White River Plateau Timber Land Reserve.....	Apr. 13, 1899	1,196,080
	Pike's Peak Timber Land Reserve.....	Oct. 2, 1899	184,320
	Plum Creek Timber Land Reserve.....	Oct. 16, 1891	179,200
	The South Platte Forest Reserve.....	Feb. 11, 1892	688,640
	Battlement Mesa Forest Reserve.....	Mar. 18, 1892	858,240
Idaho and Montana.....	The Bitter Root Forest Reserve.....	Dec. 24, 1892	4,147,200
Idaho and Wash- ington.....	The Priest River Forest Reserve.....	Feb. 22, 1897	645,120
Montana.....	The Flathead Forest Reserve.....	do.....	1,382,400
	The Lewis and Clarke Forest Reserve.....	do.....	2,926,080
	The Gallatin Forest Reserves.....	Feb. 10, 1899	40,820
New Mexico.....	The Pecos River Forest Reserve.....	Jan. 11, 1892	431,040
	The Gila River Forest Reserve.....	May 27, 1898	2,327,040
Oregon.....	Bull Run Timber Land Reserve.....	Mar. 2, 1899	142,080
	The Cascade Range Forest Reserve.....	June 17, 1892	4,492,800
	Ashland Forest Reserve.....	Sept. 28, 1893	18,560
South Dakota and Wyoming.....	The Black Hills Forest Reserve.....	do.....	1,211,680
Utah.....	The Uintah Forest Reserve.....	Feb. 22, 1897	875,520
	The Fish Lake Forest Reserve.....	Sept. 10, 1893	67,840
Washington.....	The Washington Forest Reserve.....	Feb. 22, 1897	3,594,240
	The Olympic Forest Reserve.....	do.....	1,023,840
	The Mount Rainier Forest Reserve (area reduced Mar. 2, 1899, by Act of Congress creating the Mount Rainier National Park, 30 Stat., 993).	Apr. 7, 1900	2,027,520
Wyoming.....	Yellowstone Park Timber Land Reserve.....	Feb. 22, 1897	1,239,040
	The Big Horn Forest Reserve.....	Mar. 30, 1891	1,180,800
	The Teton Forest Reserve.....	Sept. 10, 1891	820,440
	Crow Creek Forest Reserve.....	Feb. 22, 1897	56,820

About the close of 1900 a bill was introduced into Congress to create an Appalachian Forest Reserve by the purchase of not more than 2,000,000 acres of lands within Virginia, North and South Carolina, Georgia, Alabama, and Tennessee. Such a reserve would be the first to be established in the East. When it is pointed out that soft woods are mostly found on the Western reserves, and that with the diminishing supply of commercial hardwoods on the central plain eastward from the Mississippi, the lumbermen are beginning to look to the South Atlantic region, the importance of such a reserve is apparent. It is proposed to introduce scientific forestry methods, and, while permitting lumbering, to protect this, one of the most valuable hardwood sections, from the rapacity of unintelligent lumbermen.

National Parks.—There is an essential difference between a forest reserve and a national park. The former is created for the protection of forests and important watersheds; the latter, while accomplishing the same purposes, is set aside mainly for the recreation of the people, the preserving of scenery, the protection of game, historic objects and the like. No lumbering can be carried on within them, and the mining laws, with one exception, do not apply to them. The methods also of setting lands aside for parks and forest reserves are radically different. Each national park, under the control of the Department of the Interior, is provided for under a special act of Congress, in which the land is specifically described by metes and bounds, and cannot be enlarged or reduced in size without special authority from Congress. Forest reserves are created by presidential proclamations, and can be enlarged and reduced in size whenever, in the judgment of the President, circumstances warrant such action. They are under the care of the troops of the regular army, assigned by the secretary of war, but under the orders of the secretary of the interior. Besides the national parks controlled by the Department of the Interior there are a number under the direction of the War Department. Although these do not properly come within the scope of a discussion of the public domain, they are, for completeness' sake, included in the following table of national parks. The area of the military parks cannot be given, as they are not yet completed, additional land being now in course of acquisition.

STATE OR TERRITORY.	Name of Park.	Date of creation.	Estimated area in acres.
California.....	Yosemite National Park.....	Oct. 1, 1890	967,680
	Sequoia National Park.....	Sept. 23, 1890	161,869
	General Grant National Park.....		1,560
Washington.....	Mount Rainier National Park.....	Mar. 2, 1899	307,300
Wyoming (chiefly).....	Yellowstone National Park.....	Mar. 1, 1872	2,142,730
Maryland.....	Antietam National Military Park.....	Aug. 30, 1890	
Mississippi.....	Vicksburg National Military Park.....	Feb. 21, 1899	
Pennsylvania.....	Gettysburg National Military Park.....	Feb. 11, 1895	
Tennessee.....	Chickamauga and Chattanooga National Military Park.....	Aug. 19, 1890	
	Shiloh National Military Park.....	Dec. 27, 1894	

NOTE.—In addition the United States has reserved, by acts of 1832, 1877, and 1890, 912 acres containing the hot springs of Garland County, Arkansas, acting as landlord to various hotels and bathing establishments which attract an annual patronage of 50,000 visitors. It has also reserved the Casa Grande ruin, near Florence, Arizona, a prehistoric relic situated upon 480 acres set aside on June 22, 1892.

The general land commissioner again urges the inclusion within the Yellowstone National Park of the adjoining Yellowstone Timber Land Reserve and portions of the adjoining Teton Forest Reserve and adjoining tracts in Idaho and Montana. The main reasons are the more effectual protection of the timber and of the big game, which wander in large numbers from the park every winter. The land commissioner has reported on five proposed national parks. These embrace: (1) The two groves of *Sequoia gigantea* in Calaveras and Tuolumne counties, Cal., the largest and among the finest groups in existence. (2) The Wind Cave, a cavern of great extent and beauty in South Dakota. (3) The petrified forest in Arizona. The House report in Congress (No. 879) states that in its scenic features, geological interest, and general attractiveness this Arizona forest surpasses the petrified forests of the Yellowstone, of Wyoming, or of California. It is now subject to vandalism by tourists, while others have used giant powder to obtain crystals for commercial use. (4) A "pajarito" park (*pajarito* meaning a small bird) in New Mexico, a tract about 15 by 30 miles, lying 34 miles north of Santa Fé. The official report states that the district contains tens of thousands of cliff dwellings, capable of sheltering 100,000 to 200,000 people, many communal houses on the mesas above the cliffs, some of them containing from 1000 to 2000 rooms, and a large number of outposts, burial mounds and crypts, etc. (5) The Shoshone Falls Park, along the Snake River in Idaho, embracing the great Shoshone Falls, about 210 feet high, within a cañon 800 feet deep; Twin Falls, which fall 180 feet on either side of an island, and the Blue Lakes

region, containing scenic features of great beauty. Of these proposed national parks, the lands embracing the petrified forest, the great trees, and the wind cave have been temporarily withdrawn to insure them from use or disposal during the time incident to the necessary examination.

Forest Administration of the Year.—In hand with the establishment of the national forest preserves goes the important work of administering them. This includes their patrol, the detection and extinguishment of fires, the establishment and maintenance of trails, the cutting of fire-breaks, etc., and the consideration of such questions as the prohibition of grazing within the forests, the reforestation of various regions, the elimination of agricultural lands from the preserves, and the subject of conservative lumbering. The public forests have now been under the care of an organized force for about three years. At the beginning of the fiscal year 1899-1900 this force consisted of 9 superintendents, 37 supervisors, and about 250 forest rangers. One hundred additional rangers were employed during the season, July 15—October 15, which is the great danger period as regards forest fires. During the year 237 more camp or other small fires were extinguished than in the previous year. Some 173 fires beyond the incipient stage, burning 12,360 acres, were extinguished, against 223 such fires, embracing 52,112 acres, which engaged attention during 1898-99. Eight great fires were extinguished after consuming 50,680 acres of timber, against 9 fires, covering 79,500 acres, during the previous twelve months. During the year 2250 miles of trail were made accessible, 1095 miles of new trails cut, 1396 miles of trails blazed, and 264 miles of permanent fire-breaks cut, with an average width of 39 feet. The opening of trails is an important feature, in order that fires may be reached in the shortest possible time. Much attention was given during the year to the question of putting into operation a system for harvesting and marketing timber on the reserves, in accordance with the needs of the local population, coupled with provision for reproduction of the crop and maintenance of proper forest conditions. This is the first step of the government in the application of the principles of forestry to its public lands. The forest superintendents have been instructed to study the matter of lumbering and reforestation in their relation to particular reserves, and to co-operate in this work with the division of forestry of the Department of Agriculture. Future experience, the superintendent of the Land Office reports, may indicate the advisability of the transfer of the supervision of all public forests to the division of forestry. There is at present, it should be added, a lack of proper organization as regards the management of the public forests. The General Land Office administers them and the Geological Survey maps and describes them, while the division of forestry, which has all the trained foresters of the government in its employ, has nothing to do with them except as its assistance may be asked for. A discussion of this matter, as well as a treatment of the problems concerning American woodlands at large, will be found in the article FORESTRY.

LAOS, a part of Indo-China, formerly belonging to the kingdom of Siam, but under French protection since 1893, lies to the southwest of Tonquin, and has an estimated area of 91,000 square miles and an estimated population of 1,500,000. It is administered by a French official resident under the government of French Indo-China. The cost of administration is met by the other Indo-Chinese dependencies of France in the following proportions: Cochin China, six-thirteenths; Anam and Tonquin, five-thirteenths; Cambodia, two-thirteenths. The estimated expenditure for 1899 was something over 692,000 francs. The products include rice, tobacco, cotton, fruits, and teak, while gold, lead, tin, and various precious stones occur. Commerce is undeveloped on account of lack of access to the country. A number of towns on the Mekong have telegraphic communication with Hué in Anam and Saigon in Cochin China. See **INDO-CHINA**.

LARGIN, a new synthetic silver compound, representing 11.1 per cent. of silver combined with protalbin, is said to be richer in the metal than any of the other compounds. It is a gray, granular powder, soluble in hot water, precipitated neither by albumen nor by chlorides. Stephenson, in *The Therapeutist* for May 15, 1900, advocates its use in conjunctivitis, ulcer of the cornea or conjunctiva, acute contagious ophthalmia, trachoma, and lacrimal trouble. It is used as a dry powder, or in 5 per cent. or 10 per cent. solution. It is more likely to stain the conjunctiva than nitrate of silver or any of the other synthetic compounds of the nitrate.

LASSEERRE, HENRI DE MONZIE, a French writer, died July 23, 1900, at the age of 72. After studying law in Paris he became a journalist, collaborating on the *Revue du Monde Catholique* and finally becoming editor-in-chief of the *Contemporain*. He made himself especially prominent by the vehemence with which he attacked Renan's *Vie de Jésus*, and finally by the ardor with which he advocated pilgrimages to Lourdes. Believing himself to have been saved from blindness by a bottle of Lourdes water, he became the historian of that shrine, his monograph *Notre Dame de Lourdes* (1869) being translated into 43 languages. His French

translation of the Gospels was approved by many bishops, but was finally put on the Index.

LATTER DAY SAINTS. See MORMONS.

LAVROFF, PYOTR LAVROVICH, Russian philosophical writer and revolutionary exile, was born June 14, 1823, at Melekhoff, government of Pskoff, and died in Paris on February 6, 1900. After receiving a military education he taught in the Government Artillery School. His literary activity began with poems, of which many were anti-governmental in spirit. Scientific articles, like the *Essay of a History of Physical Sciences* (1865), followed in the *Artillery Journal*, of which he was assistant editor. His articles *Theory of Personality* (1860) produced a great sensation, as the author advocated a critical attitude and inviolable union of theory and practice in all matters. Then came the *Three Talks on the Contemporary Importance of Philosophy* (1861), which were hardly less effective. In 1862 he joined the revolutionary circle, *Land and Liberty*, but went unmolested until 1866, being meanwhile editor of the *Russian Encyclopædic Dictionary* (1861-64). After Karakozoff's attempt on Alexander II.'s life Lavroff was arrested in April, 1866, and tried by a court-martial in August of the same year. He was sent to an out-of-the-way town in the government of Vologda, and from there contributed, under the pseudonym Mirtoff, his essays: *Civilization and Savage Nations; Morality*, and his famous *Historical Letters*, printed in *The Week* (1868-69). These latter, reprinted in book form, became the political gospel of the younger generation, especially among the thousands of young men and women who left their homes to live among the peasants and try to better their lot, after they had joined the great democratic movement of the seventies known as "going to the people." On February 27, 1870, he escaped with the help of the well-known revolutionist Lopatin, and on March 13, after dangerous adventures, he came to Paris. Here he became a member of the Anthropological Society, and a staff contributor for *Revue Anthropologique*. He was very active during the Commune, and went to Brussels and London to ask aid from the General Council of the International. In 1873 he started at Zurich the semi-monthly *Forward*, which he left three years later. From 1883 till 1888 he published the revolutionary organ *Messenger of the People's Will*, and in 1892-96 several volumes of *Materials for the History of the Russian Social-Revolutionary Movement*. His greatest work is the monumental *Essay of a History of Thought of Modern Times*, of which only the first and a part of the second volumes appeared, the greater part being ready in manuscript.

LAWES, SIR JOHN, F.R.S., the great promoter of scientific agriculture, died August 31, 1900, at the age of 86. After graduating from Brasenose College, Oxford, he spent some time in London making a study of practical chemistry, and in 1834 began the experiments on his property at Rothamstead, which have solved many important questions in agriculture. Afterward, near London, he established extensive works where superphosphate of lime for fertilizers was manufactured. In 1843 Sir Henry Gilbert became associated with him, and the results of their investigations have been published in various leading scientific and agricultural magazines. Sir John Lawes has been highly honored for his services both in Great Britain and in the United States. The interest which he took in American agriculture is shown by his establishing of the Lawes Agricultural Trust, by which provision is made for a biennial course of lectures in the United States on the work at Rothamstead; one course was given at New Haven, Conn., November, 1900, before the Association of American Agricultural Colleges and Experiment Stations. He provided for the continuance of the investigations at Rothamstead in perpetuity.

LAWN TENNIS. The most noteworthy event of the year 1900 connected with the game of lawn tennis was the visit to the United States of three of the best players of England. The visit of Goodbody in 1895, and that of Mahoney, Eaves, and Nisbet in 1897, had made Englishmen acquainted with the constantly increasing skill of the American players. In 1900 Dwight F. Davis, of Harvard, presented the Davis International Challenge Bowl as a perpetual trophy, and an invitation, sent by the National American Association to the English Lawn Tennis Association for a series of matches, was accepted and a challenge sent. The resulting games constituted the first international lawn tennis tournament between England and the United States to be held under the sanction of the two national associations. The game took place August 8-10, on the courts of the historic Longwood Cricket Club, near Boston, Mass. The conditions of the contest called for four matches in singles and one in doubles, the team winning the majority of matches to take the cup and the international championship. The English players were A. W. Gore (captain), E. D. Black, and H. R. Barrett. These players were officially ranked, according to their play in 1899, sixth, fifth, and fourteenth respectively, but they are probably among the very best English players, with the possible exception of the Doherty brothers and Dr. Eaves. The American players were Malcolm D. Whitman, national cham-

pion in singles in 1898, 1899, and 1900, and Dwight F. Davis and Holcombe Ward, national champions in doubles in 1899 and 1900. The tournament was won by the Americans as follows: Whitman beat Gore 6 to 1, 6 to 3, 6 to 2; Davis beat Black 4 to 6, 6 to 2, 6 to 4, 6 to 4; Davis and Ward beat Black and Barrett 6 to 4, 6 to 4, 6 to 4; Davis played Gore 9 to 7, 9 to 9 (unfinished), a severe thunder storm bringing the match to an abrupt end, and preventing the final match between Whitman and Black. The result then stood: United States—3 matches to 0, 10 sets to 1, 76 games to 50. As the Americans had won the first three matches and the tournament, and as Barrett was to return to England the following day, no further matches could be played. The Englishmen were beaten fairly, their only complaint being that the courts were not as fast as those they had been accustomed to playing on at home. They were overwhelmed by a style of play with which they were entirely unfamiliar, such as the service of Davis, Ward, and Whitman, and especially that of the latter, and the fastness of the American's play, particularly the cyclonic style of Davis. Although the Americans won all their matches, some of the contests were among the pluckiest and most exciting ever seen in this country. It is expected that the English Lawn Tennis Association will again send a challenge for the Davis trophy in 1901, and it is believed that one or both of the Doherty brothers will be among the contestants.

The international play did not end with this tournament, Gore and Black entering a tournament at Southampton, Long Island, N. Y., being beaten in singles by Stevens and Larned, and in doubles by Wrenn and Campbell. The pair entered also in the twentieth annual tournament of the United States National Lawn Tennis Association, August 14-22, at Newport, R. I. In the character of players the entry list in 1900 was much stronger than for many previous seasons. In doubles the defeat of Hackett and Allen, of Yale, Eastern champions, by Little and Alexander, of Princeton, Western champions, furnished a considerable surprise. The latter were then beaten by Ward and Davis, of Harvard, the national holders. In singles all the crack players entered. Gore reached the semi-finals, when he was beaten by G. L. Wrenn, Jr., who had the previous day beaten his brother, the one-time champion. Larned won easily on the final day against Wrenn, and gained for the first time, after a number of years of hard play, a chance for the national championship. Larned, though erratic, is probably the most brilliant player in this country. Much interest was aroused in his match with Whitman in the championship round, but the latter won after splendid play on both sides by 6 to 4, 1 to 6, 6 to 2, 6 to 2, taking the championship for the third successive year. The women's national championship, June 19-23, at Philadelphia, was won by Miss Myrte McAteer, of Pittsburg, Penn., by default from Miss Jones, of California, who was playing abroad. Miss Parker and Miss Hallie Champlin, Chicago, won in doubles, and Miss Hunnewell and Alfred Codman, Boston, won the mixed doubles. R. D. Little, Princeton, won the intercollegiate singles, and Little and Alexander, Princeton, the doubles. The annual international tournament with Canada was also won by Little in singles; in doubles the Hardy brothers, of California, won. The first national indoor tournament was held at New York in February; Allen, of Yale, won the singles and J. P. Paret and C. Crogin, New York, the doubles. Official ranking for 1900, first ten: M. D. Whitman, D. F. Davis, W. A. Larned, J. P. Paret, K. Collins, G. L. Wrenn, Jr., L. E. Ware, B. C. Wright, H. Ward, R. P. Huntington.

In Europe lawn tennis has a widespread popularity. M. J. G. Ritchie, of England, beat H. S. Mahoney (holder), England, at Ostend, Belgium, by default for the championship of the continent. R. F. Doherty again won the English national championship.

LEAD. The production of lead in the United States in 1899 amounted to 209,240 short tons, valued at \$18,831,600, and the estimated figures for 1900 are 251,781 tons, an increase of 32,401 tons over the production of 1899. Much of the metal produced comes from the important silver-lead regions of Idaho, Montana, and Colorado, although there was also considerable activity shown by the mines of southeastern Missouri during the past year. In addition to the native ore, imported ores and base bullion were refined, these products coming chiefly from Mexico and to some extent from British Columbia.

The amount imported during 1900 was 224,343,349 pounds, valued at \$3,824,192, and distributed as follows:

	Quantity, Pounds.	Valued at.
United Kingdom.....	567,482	\$19,371
Germany	225,222	7,947
Other European countries.....	111,905	3,429
British North America.....	37,689,162	1,054,889
Mexico	178,602,486	2,648,735
Other countries.....	7,147,092	89,821
	224,343,349	\$3,824,192

From this imported ore there were produced during 1900, 103,705 short tons of lead, as compared with 76,423 tons in 1899. The average price per pound at New York was 4.73 cents, against 4.47 in 1899, the price varying from 3.90 cents to 4.70, while the price at the end of the year was 4.375 cents.

LEAGUE OF AMERICAN WHEELMEN is an organization to promote the general interests of cycling; to ascertain, defend, and protect the rights of wheelmen, and to secure improvement in the condition of the public roads and highways by promoting in the public mind a sense of the utility, general economy, and desirability of high-class roads, and persuading legislators to make laws and provide money to create better highways. Organized May 31, 1880. Annual meeting on the second Wednesday of February in each year. Headquarters, 530 Atlantic Avenue, Boston, Mass. Secretary, Abbot Bassett. See CYCLING.

LEATHES, STANLEY, D.D., professor of Hebrew in King's College, London, prebendary of St. Paul's, and rector of Much Hadham, Herts, died in the latter town April 30, 1900. He was born March 21, 1830, and was educated privately and at Jesus College, Cambridge. He became a curate in London, and in 1863 accepted the professorship of Hebrew in King's College, a position he retained to the time of his death. Dr. Leathes was a member of the Anglican committee for the revision of the Old Testament, which sat from 1870 to 1884. Among his publications are: *The Witness of the Old Testament to Christ*; *The Witness of St. Paul to Christ*; *The Witness of St. John to Christ* (the three being the Boyle lectures, Whitehall, for 1868, 1869, and 1870 respectively); *The Structure of the Old Testament* (1873); *The Gospel its Own Witness* (the Hulsean, Cambridge, lectures for 1873); *The Religion of the Christ* (the Bampton, Oxford, lectures for 1874); *Grounds of Christian Hope* (1877); *The Christian Creed, its Theory and Practice* (1877); *Old Testament Prophecy, its Witness as a Record of Divine Foreknowledge* (the Warburton lectures, Lincoln's Inn, 1880); *The Foundations of Morality* (1882); *Characteristics of Christianity* (1883); *Christ and the Bible* (1885); *The Law in the Prophets* (1891). At the time of his death Dr. Leathes was spoken of as a "most thorough and at the same time most conservative" representative of Old Testament scholarship.

LEeward ISLANDS, a group of islands constituting a British colony, are situated between Porto Rico and the Windward Islands. The group includes the islands of Dominica, Antigua, St. Kitts, Nevis, Montserrat, the Virgin Islands, and Anguilla, besides a few small islands. The total area of the group is about 701 square miles, and the population was estimated at the end of 1899 at 140,000, mostly negroes and mulattoes. The chief towns of the colony are St. John, Antigua, the seat of the federal government, with a population of nearly 10,000; and Basseterre, St. Kitts, with a population of over 9000. The principal products of the colony are sugar, molasses, and limes and lime juice. The commerce of the colony for 1899 shows a considerable increase over 1898. The imports increased from £299,976 in 1898 to £340,112 in the following year. The principal articles of import were food-stuffs, £141,192; textiles, £74,876, and metal manufactures, £16,994. Of the total imports, £148,403 came from Great Britain, £137,225 from the United States, and £45,205 from British colonies. The exports for 1899 amounted to £351,429, as compared with £286,403 in 1898. The export of sugar increased from £174,098 in 1898 to £230,029; molasses from £8596 to £20,152, and lime juice from £25,753 to £32,780. The export by countries was as follows: Great Britain, £60,207, against £62,563 in 1898; United States, £234,254, against £178,348 in 1898, and the British colonies, £41,722, against £28,075 in 1898. It will be seen that the trade of the United States with the colony in 1899 increased by nearly £80,000, as compared with the commerce of the preceding year. The total tonnage of steamers and sailing vessels entered and cleared at the ports of the colony during 1899 was 1,535,802 and 91,415 respectively. The revenues and expenditures of the colony for 1899 were £121,561 and £143,285 respectively, against £112,577 and £138,612 in 1898. The increase in the expenditures is due mostly to the disastrous hurricane which swept Montserrat and Nevis in the summer of 1899. The public debt of the colony at the end of 1899 amounted to £294,121. The total number of pupils in the elementary schools of the colony in 1899 was 24,879, and the total amount expended on education during the same year was nearly £7000, of which over £6000 was contributed by the government. For administrative purposes the colony is divided into the five presidencies of Antigua, St. Kitts, Dominica, Montserrat, and Virgin Islands, each provided with one or two legislative chambers. The central administration is in the hands of a governor and commander-in-chief, assisted by the federal executive council, nominated by the crown, and by the federal legislative council, consisting of 10 nominated members and 10 elected by the members of the legislative councils of the several presidencies.

LEGION OF HONOR, founded by Napoleon in 1802 as a reward for military and civil services. In 1900 there were 52 grand crosses, 210 grand officers, 1027

commanders, 5679 officers, and 36,170 chevaliers. The vast number of this order has detracted from its value. In 1872 there were nearly 70,000 members, but since that date restrictions have been placed on elections to membership, which are for life. Military members receive from 500 to 3000 francs a year, according to rank. The French president is grand master of the order.

LEIBL, WILHELM, a celebrated German artist, died at Würzburg in December, 1900. He was born at Cologne in 1846, and studied at Munich and Paris. Many of his works, with others of the so-called new school to which he belongs, hang in the Pinakothek of Munich. One of the most famous works, "The Village Politicians," (1878), brought 100,000 marks at the sale in the first "Secession" exhibition at Berlin in 1899. His favorite subjects are the rough-featured peasants of Bavaria. His style is strong, but lacks refinement.

LELAND STANFORD, JUNIOR, UNIVERSITY, Palo Alto, Cal., opened in 1891. Statistics for the academic year 1899-1900 show a faculty of 130 and a student body of 1390. The additions to the library collection during the year were 10,000 volumes, making a total of 55,000 volumes. The university income for the year was between \$500,000 and \$600,000. The total endowment at present, including invested funds, is over \$20,000,000. Eight new stone buildings are now in process of construction, all being part of the original quadrangles, with the exception of the new chemistry building. In view of the rearrangements of entrance requirements and curricula now being made in the universities and colleges throughout the country, it is of interest to note the conditions which obtain in this, one of the youngest institutions. In the matter of entrance requirements the attempt has been made from the outset to insist upon an adequate preparatory training without prescribing particular subjects. The university has endeavored to recognize everything of disciplinary value in the schools and not to exalt one subject unduly above another. At the same time it has endeavored not to recognize ineffective or insufficient work in any subject. At present the entering student may offer 15 credits for full standing, selected from 29 different subjects, the only one prescribed being English composition, counting 2 credits. These 29 subjects are: English composition, elementary algebra, plane geometry, solid geometry, trigonometry, advanced algebra, physics, chemistry, physiology, botany, zoology, freehand drawing, ancient history, mediæval and modern history, English history, English literature, Spanish, French, German, Latin, Greek, biology, physiography, mechanical drawing, woodworking, forge work, foundry work, machine-shop work. These have different values, but the student may offer any that count up 13 credits to supplement the English composition. In the matter of entrance examination tests the university is looking hopefully forward toward a uniform definition of subjects by all the universities and a uniform series of examinations by a central authority. The requirements for graduation are: Four years of undergraduate study directed toward some special end. No subjects are prescribed for graduation, but each student must choose the work of some one department as a major subject, and a third of his four years' work must be devoted to this major subject, or to this major subject and some closely allied minor or minors. For all of his undergraduate work his major professor is his educational adviser; but, in general, for two-thirds of his work the student may freely select such courses as his previous preparation will enable him to carry. In November, 1900, events at Stanford again brought to public notice the question regarding the subject of academic freedom of speech, for a discussion of which see the article **UNIVERSITIES AND COLLEGES**.

LEO XIII. See **ITALY** and **ROMAN CATHOLIC CHURCH**.

LEPROSY. It is reported that there are several hundred lepers in Louisiana, not all of whom are living on the plantation leased for them by the State, owing to inoperative laws. A State appropriation of \$20,000 was made for the purchase of a site in 1898, but was found to be inadequate. The board of control asks \$40,000 more this year with which to buy and equip a proper plantation on the Mississippi River. At the meeting of the American Public Health Association in November, 1900, the report of the committee on national leper home was made by Dr. H. M. Bracken, of Minneapolis, Minn., advocating the establishment of national leprosaria in the United States. He reported the following number of lepers in certain States: North Dakota, 2; South Dakota, 1; Iowa, 3; Minnesota, 61; New Jersey, 1; Ohio, 1; Pennsylvania, 6; Wisconsin, 7. Another observer, Dr. Hyde, had reported 120 cases of leprosy in Minnesota and 20 each in Iowa and Wisconsin. Bracken advocates leprosaria on the plan of colonies for epileptics, furnishing a home, work, and amusement. The leper colony at Molokai, Hawaii, is reported to contain 1100 persons this year, 625 males and 475 females. Of the total, 984 are Hawaiians, 62 are half-breeds, 37 are Chinese, 5 are Americans, 4 are British, 4 are German, and 6 are Portuguese. It is announced that there are 14 lepers on the island of Guam, but that the disease is not increasing.

In a report to the surgeon-general of the United States Army the president of the Board of Health in Manila, P. I., states that leprosy was introduced into the Philippines in 1633 by the Emperor of Japan, who deported 150 lepers thither. The present estimate is that there are 30,000 lepers in the archipelago, principally in the Visayas. In Manila recently 100 lepers were found concealed in various dwellings. The plan of the health authorities and of the army board appointed by General MacArthur is to collect the lepers and segregate them on an island, where hospitals and other buildings shall be erected for their care. The possibility of spreading leprosy through mail matter transmitted from our new possessions has been discussed. At present mail from the leper settlement at Molokai is disinfected with sulphur dioxide at the settlement, and again with formaldehyde at Honolulu, the letters being perforated or their corners clipped. Dr. Carmichael, of the Marine Hospital Service, at Honolulu, reports that although mail from the leper settlement has been transmitted without disinfection for many years, no case of leprosy has been found among the post-office employees.

Dr. Zepherino Falcao, of Lisbon, reports that there are 1500 lepers in Portugal, scattered among a total population of 4,700,000 since the abandonment of leper houses in that country. Most of the cases are on the coast or in the deep valleys. The German Imperial Board of Health, in a report published in 1900, states that 22 cases of leprosy exist in Memel, Prussia, close to the Russian border. At Hamburg 10 cases are found, and in Mecklenburg-Schwerin 1 case. One case of leprosy has been discovered in Zürich, Switzerland, in the person of a Brazilian. Japan is said to have 200,000 registered lepers, China and India about 500,000 each. Dr. Adolpho Mercondes de Moura, of Sao Paulo, Brazil, asserts that rattlesnake poison has long been used by the natives to cure skin diseases and leprosy. After experimenting with the poison on 15 lepers he is prepared to say that uncomplicated *lepra tuberculosa* is curable by these means. Professor Lewin, of Berlin, thinks the rattlesnake poison is not a true antidote for leprosy, but may have a temporary effect. See INSECTS AND THE PROPAGATION OF DISEASE.

LEVI, HERMANN, German operatic conductor, died in May, 1900. Born at Giessen on November 7, 1839, he received his musical instruction from Vincenz Lachner at Mannheim and in 1855-58 at the Leipzig Conservatory, acquiring great proficiency as a piano-player. In 1859-61 he was musical director at Saarbrücken; from then until 1864 at the German Opera House in Rotterdam, and from the latter year until 1872 he conducted in Carlsruhe. After 1872 he was orchestra leader at the court theatre in Munich, where he was appointed "general musik director" in 1894. In 1896 he resigned on account of ill health, and was pensioned. A warm personal friend of Wagner, Levi was one of the most distinguished conductors of that master's operas, and directed the first production of *Parsifal* in Bayreuth in 1882, subsequently acting as conductor at almost every festival. His interpretations of the great classics of music in symphonic concerts were famous the world over, and the performances of Mozart's operas under his supervision set a standard for all subsequent productions. He was often styled "the poet at the conductor's desk."

In 1898 he supplied a new text for *Così fan tutte* for the great Mozart cycle, and translated Chabrier's *Gwendoline* and Berlioz's *Les Troyens à Carthage*. At Bayreuth he conducted the performances of *Tannhäuser* in 1891, 1892, 1894; *Tristan und Isolde*, 1886, 1889, 1891, 1892; *Die Meistersinger*, 1889, 1892; *Parsifal*, 1882, 1883, 1884, 1886, 1889, 1891, 1892, 1894. He was equally successful in all musical centres of Europe, and was instrumental in popularizing the compositions of the younger school, of which Richard Strauss stands as the pre-eminent representative. Small of stature, somewhat bent, with bright, fiery eyes, he exercised a magnetic influence over his musicians, his rigid precision often being misinterpreted as dryness by the uncritical. He was fond of painting, and his collection of art treasures was one of the finest in the hands of a private individual. His father was the chief rabbi at Giessen, and the devotion to him kept Levi from changing his faith, which was often a drawback in his career.

LÉVY, PAUL CALMANN, the head of the great Paris publishing house bearing his name, died February 3, 1900, at the age of 46 years. The publishing house was founded by his uncle, Michel Lévy, in 1836. After the death of his father, Calmann Lévy, in June, 1891, Paul Lévy assumed control of the business in association with his brothers, Georges and Gaston.

LEWELLING, LORENZO D., ex-governor of Kansas, died at Arkansas City, Kan., September 4, 1900. Born at Salem, Ia., December 21, 1846, his career touched all phases from common railroad labor to chief executive officer of his State. Being left an orphan at 9, he worked on a farm and attended night school in winter, until at 16 he became a laborer on the Chicago, Burlington and Quincy Railroad, and during the Civil War a cattle driver for the Union army in Tennessee. At the close of the war he studied at Knox College, Galesburg, Ill., for a time (1866), and then

left to become assistant superintendent and teacher in a negro reform school for boys. Assuming the rôle of editor, Lewelling founded the *Des Moines Capitol* (1880), and continued as its editor until 1882. Then in 1887 he removed to Wichita, Kan., where he engaged in mercantile pursuits, and in 1892 was the fusion candidate for governor on the Democratic and Populist tickets, being elected by a plurality of 5432 votes. Failing of a renomination in 1894, he retired in 1895 at the end of his term, but maintained until his death keen interest and strong influence in the councils of the Populist party. Latterly his political tendency was increasingly socialistic.

LEYDS, WILLIAM JOHANNES, Boer agent in Europe since 1898, was born in 1859 at Magelang, in Java, and was educated in Holland, receiving the degree of Doctor at Law from Amsterdam University. He became attorney-general of the South African Republic in 1884, state secretary in 1888, justice of the peace at large the following year, and state secretary again in 1893 and 1897. As representative of the Boer interests in Europe he was active in rousing sympathy for the two republics and in supplying them with arms. Residing chiefly in Holland and Belgium, he carried on an energetic newspaper campaign in many countries of Europe, in Germany and France especially, and to a less degree in Italy, winning the support of jurists and moralists for the Boer cause.

LIBERIA, a negro republic of Africa, occupies some 350 miles of the Guinea coast, between the French colony of the Ivory Coast and the British colony of Sierra Leone. The area has been stated to be about 14,000 square miles. But the northern boundary separating Liberia from French Guinea has not been definitely settled. The Liberian frontier is usually regarded as extending for, perhaps, 250 miles inland; and, accordingly, the area of the country is probably about 75,000 square miles. The estimated population is about 1,500,000. Of these, some 24,000 are civilized Americo-Liberians, while the remainder are aboriginal blacks, most of whom are still in a barbarous condition. The capital is Monrovia (population about 6000); other towns are Buchanan (5000), Edina (5000), Harper (3000), Robertsport, Cape Mount, and Half Cavally.

The constitution, modelled on that of the United States, vests the chief executive authority in a president, elected for two years, and assisted by a cabinet, representing the departments of state, finance, justice, war and marine, the interior, and posts. The president in 1900 was Mr. William David Coleman, who, as vice-president, succeeded to the office upon the death of President J. Cheeseman, November 13, 1896. But owing to a disagreement with the congress on matters of internal policy, Mr. Coleman resigned on December 11, 1900; he was succeeded by the secretary of state, Mr. G. W. Gibson, who was elected by special legislation. The legislative power devolves upon a congress of two houses, the senate and the house of representatives, members of the former, eight in number, being elected for four years, and of the latter, thirteen in number, for two years. Negro self-government in Liberia appears to be a failure, since it is said that the country is in a condition of political and financial incapacity. As evidence of recent progress, however, the United States minister at Monrovia notes "the enactment of a criminal code defining crime and fixing punishments," to take the place of the English and American laws that have been used in the courts; "the creation of a bureau of education; the reopening of the College of Liberia; the enactment of an election and registration law; the establishment of bonded warehouses in every port of entry, thus reconstructing the customs regulations of the republic; the organization of the Grand Cape mountain region into a new territory, with Robertsport as the capital; and the creation of the Liberian Mining Association with a capital stock of \$300,000." There is no regular army, and Liberia's only war vessels—two small gunboats, the *Gorromah* and the *Rocktown*—were lost in March, 1900, the latter being sunk in the harbor of Monrovia, and the former capsized. Revenue accrues chiefly from customs; the revenue and expenditure for 1898 were reported to balance at £40,000 (\$194,640). The foreign debt, with interest arrears, amounts to over \$868,000. There is also an internal debt, the interest on which exceeds the principal. Accounts in Liberia are usually kept in United States currency. The official language is English.

The leading exports are coffee, palm oil, palm kernels, rubber, sugar, cacao, arrow-root, hides, ivory, and piassava; the principal imports are cotton goods, haberdashery, provisions, hardware, earthenware, and rum. No trade returns issued by the Liberian government are available. One authority states that the total value of imports and exports is probably not greater than £500,000 (\$2,433,000), but even this figure appears to be too high. According to a United States government publication, the imports and exports for the fiscal year 1896-97 amounted to \$505,235 and \$680,031 respectively. The United States *chargé d'affaires* at Monrovia has reported that the imports in 1899 were valued at \$886,390. The greater part of the commerce is with Great Britain and Germany. According to the *Summary of Commerce and Finance*

for December, 1900, issued by the United States Bureau of Statistics, the exports of Liberia to the United States in 1890 amounted to \$15,287, and in 1900, \$4351, the imports from the United States for the same years being \$27,956 and \$27,355 respectively.

LIBRARY ASSOCIATION, AMERICAN, a body composed of 850 librarians, library trustees, and others interested in library work. Organized in 1876 and incorporated in 1879, it includes in its membership Canadians as well as citizens of the United States. Its purposes are well summarized in its motto, "The best reading for the largest number at the least cost." Through its efforts librarianship has come to be recognized as a profession, and the public library has taken its place as an essential part of the American educational system. The annual conference held in June, 1900, at Montreal was the first to meet on Canadian soil. The most interesting topic discussed in the meeting was that of co-operative cataloguing. And it did not end in discussion, but the action taken will be of the utmost advantage to American libraries. For a number of years the publishing section of the association has prepared cards for the most popular new American books. But the expense to subscribing libraries has been great, and the results have been small as compared with the needs. Plans were made for the cataloguing at a central bureau of all American, English, French, and German books that may be added to any subscribing library. It is hoped that the work will be done under the direction of the Library of Congress. Any library may have the cards at a slight advance over actual cost. Even the smallest library, therefore, may be able, at a minimum subscription of \$25 a year, to secure the printed cards, cataloguing its own accessions of new books. The largest library, at a proportionate increase in expense, may secure printed cards for its own new accessions or even have cards which will represent practically every new book added to any American library. This method will do away with a great part of the duplication in cataloguing, which has meant so much waste of energy.

The American library exhibit made at the Paris Exposition of 1900, and to be shown at the Pan-American Exposition at Buffalo in 1901, was specially prepared by the New York State Library on behalf of the association. The twenty-third general meeting will be held at Waukesha, Wis., in July, 1901. The president and secretary, respectively, for 1900-01 are Henry J. Carr, librarian of the Scranton (Penn.) Public Library, and Frederick W. Faxon, 108 Glenway Street, Dorchester, Mass. See **PROGRESS OF THE CENTURY**, paragraph Libraries (Appendix).

LIEBKNECHT, WILHELM, a celebrated German socialist, died August 6, 1900. He was born at Giessen 1826, and studied at the university of that town, at Berlin and at Marburg, with the intention of practising law. His socialistic tendencies, however, involved him in the Polish revolutionary movement, and he was expelled from Austria in 1846. Two years later, during the revolution in Paris, he was in the ranks of the *ouvroiers*. Then, taking part in the Baden revolt to establish a German republic, he suffered nine months' imprisonment at Freiburg. In 1849 he offended the Swiss authorities and was forced to leave for England, where he was for twelve years engaged in newspaper work, an associate of Karl Marx and Frederick Engels. When an amnesty was proclaimed in 1862 Herr Liebknecht returned to Germany, but for propagating his extreme views he was banished from Berlin and Prussia. Elected in 1867 to the parliament of North Germany, at the same time he edited the *Demokratisches Wochenblatt*, and in this sheet and in parliament attacked "the fratricidal iniquity" of Bismarck's policy so fearlessly that with his associate Bebel he was imprisoned for two years for high treason. During his confinement he was made member of the German *Reichstag*, and held this position until his death. The anti-Socialist law in operation in 1878-90 deprived Liebknecht of direct intercourse with his family and led to frequent imprisonments. In 1886 he made a tour through the United States, and on his return to Germany published *Ein Blick in die Neue Welt* (1887). During the last ten years of his life, with the exception of a lecture tour in England in 1896, he resided in Berlin editing the *Vorwärts*, the organ of the German Social-Democrats. His uncompromising opinions are said to have been great obstacles in the transformation of the German Socialists from a revolutionary into a reform party, but his heroism and staunch convictions commanded the respect of all, including those who disapproved of his philosophy.

LIFE SAVING SERVICE. At the close of 1900 there were 268 life-saving stations in the United States, of which 194 were on the Atlantic coast, 58 on the Lakes, 15 on the Pacific coast and 1 at the falls of the Ohio, at Louisville, Ky. The cost of maintaining the service during the year was \$1,535,987. The value of property saved was \$7,234,690, and 2655 lives were rescued.

LI HUNG CHANG, the great Chinese diplomat, was appointed one of the commissioners to negotiate peace with the foreign Powers after the Boxer uprising of 1900. Li Hung Chang, who is now 78 years of age, was first brought into

prominence by his part in the Taiping rebellion. He began his diplomatic career after the missionary massacres at Tientsin in 1870. The menacing attitude of France, supported by the representatives of Western Powers, then placed the imperial government of China in great danger. Earl Li, who was made minister plenipotentiary for the effecting of a settlement, was able to avert a European war. For the following twenty years this skilful diplomatist controlled the foreign relations of the empire, personally taking part in all important treaty negotiations and diplomatic controversies. He has suffered several temporary removals from power. His prestige has been due to his success in arranging compromises with foreign Powers. His international policy, well carried out, is to gain by falsehood and intrigue as much as possible for China. When it has been necessary to favor a European government, Earl Li has been consistently well disposed toward Russia. He is blamed by his countrymen for signing the 1896 secret treaty with Russia, which was followed soon after by the loss of Port Arthur and Talienwan. He has always been friendly to the United States. Li Hung Chang's apparent influence over the empress dowager, accompanied by his somewhat liberal tendencies, displeased the extreme conservative party, who brought about his recent removal from Peking to Canton, the capital of the province over which he was made viceroy. It is felt by Europeans that with the reputation of a reformer Li Hung Chang is in reality a wily instrument of reaction. The decided stand of the Western nations after the recent outrages in Peking gave him little opportunity for gaining concessions to China, and it was expected at the end of the year that he would be instructed to sign the joint note of the Powers.

LIQUID AIR AND BACTERIA. In the *London Lancet* for April 12, 1900, Allan Macfadyen and S. Rowland report an experiment in which they put broth emulsions of various bacteria in sealed quill tubes and immersed the tubes completely in liquid air for seven days. In spite of the enormous mechanical strain and a temperature of about $-190^{\circ}\text{C}.$, no alterations were seen in the structure of the bacteria, and their growth was only slightly delayed.

LITERATURE, AMERICAN AND ENGLISH. There was little in the literature of the year outside of fiction which could be said to denote any new "tendency." An exception to this statement is, perhaps, found in the *Herod* of Stephen Phillips, which, following his *Paolo and Francesca*, gives rise to the hope that the poetasters will be discouraged and that another and genuine school of poetry will arise. In fiction the extraordinary sales of *To Have and to Hold*, a story of colonial life, seemed to mark the culmination in popularity of the historical novel, and the public choice of books published after it seemed to give evidence that the great reading public were ready to turn their attention to some other kind of diverting story. Several quasi-character novels succeeded admirably during the year, and as these were uniformly of a cleanly kind, there appeared no reason to believe that the decadent and problem novel would again in the immediate future occupy a prominent place. Because of the tremendous advertising by which many books were hoisted into widespread notice, the judgment and criticism of new books became increasingly difficult. At least a dozen "Supreme Stories of the Century" were heralded, and the "Great American Novel" and the "Novel of the Year" were as the leaves of the trees. Outside of these publishers' wonders, however, were a few really remarkable books, of which *Unleavened Bread*, a social satire by Robert Grant, may be mentioned as exhibiting poise and placidity of culture to an unusual degree.

Fiction.—Of historical novels appearing during the year, many of which ran through editions which it seemed would never end, special mention may be made of *To Have and to Hold*, by Mary Johnston, and *Alice of Old Vincennes*, by Maurice Thompson. Both of these works deal with murderous Indians of the colonial period, with canoes and tomahawks, scalps, scouts, and hairbreadth escapes. Miss Johnston's novel is written in a picturesque style, and the writer was especially praised for her power of natural description. It cannot be regarded, however, as an accurate historical study of colonial and Indian life. Mr. Thompson's history, though not flawless, is in the main accurate. It takes up a considerable portion of the book, somewhat to the detriment of the story. Nevertheless, his book has appealed to a large number of readers. *Richard Yea-and-Nay*, by Maurice Hewlett, is a story of English adventure whose main character is Richard the Lion-Hearted. The author's style is charming; his characters, particularly his heroine, are vividly portrayed. He has his own theories about history, and they are doubtful; nevertheless, his story is good reading. In *the Palace of the King*, by Marion Crawford, is a love story of old Madrid, told in Crawford's usual manner, with a moderately well-pictured historical background. *A Friend of Cæsar*, by William Stearns Davis, is a novel of the latter days of the Roman Empire, considered not from the Christian but from the pagan standpoint. Thus the work is intended to supplement *Quo*

Vadis, and to interpret Roman life as the Roman patricians would have interpreted it.

Of novels which are essentially psychological studies, the three most prominent ones are, perhaps, *Tommy and Grizel*, by James M. Barrie; *Eleanor*, by Mrs. Humphry Ward, and *The Touchstone*, by Mrs. Edith Wharton. *Tommy and Grizel* is an able portrayal of a character who is too much of an artist and too little of a man to love truly, though he longs to do so; who understands love intellectually, but cannot realize it. The subtlety and curious indirection of Tommy's motives and the delicacy and keenness of his perceptions mark him as an extraordinary character, whose development, however, is logically and rigorously carried out. *Eleanor* is an account of social and religious conditions in papal Italy, with a story delineating three characters, two women in love with a brilliant but unpleasant man. The drawing of character and the descriptions of scenery are admirable, but many readers find the story lagging at the end. There has been, moreover, objection to a certain passage involving a mad woman as too melodramatic—out of key with the rest of the "atmosphere." *The Touchstone* shows, as did the *Greater Inclination*, by the same author, a literary style of flexibility and finish, and unusual power in magnifying and bringing into relief motives and feelings of every-day life. It is the psychology of the commonplace made dramatic, and accentuated by aphorism and epigram.

Unleavened Bread, by Robert Grant, is a satire upon the vain glory and false standards of those Americans, and more especially of those American women, who aspire, without birth, without training and without learning, to become social leaders and to set the fashion in ethics and æsthetics, politics, literature, and life. Selma White, the heroine, is a distinct creation in fiction. She is the incarnation of that prevalent and irritating type, crass enough and hypocritical enough to push up, by the self-assurance which comes of ignorance, to a pretty fair place "in the public eye." The story is throughout a discriminating study of social conditions, told without aid of sermonizing or "the wax flowers of rhetoric." *The Reign of Law*, by James Lane Allen, is a story of the Kentucky hemp fields. It is written with a delicate appreciation of nature's moods and a wealth of sentiment approaching sentimentalism. The theme of the novel is the familiar and popular story of a poor, ungainly but earnest youth, trained in a narrow Christian home, who, by his studies of Darwin and other writers of the evolutionary school, is at first brought to discard the teachings of the Gospel, but later, and after representations made by his fiancée, is induced to reconcile the truths of science and religion. Of shorter love stories there are two of unusual grace. The scene of the *Cardinal's Snuff-Box*, by Henry Harland, is laid in Italy, near Rome. The plot is neither enterprising nor involved, but the little incidents and mischances occurring to two people who are endeavoring to become better known to each other are related with charming simplicity and with an air of kindest good will. *Monsieur Beaucaire*, by Booth Tarkington, is scenically very different, being a mock heroic tale of the adventures of a French prince sojourning *incognito* in Bath. His love for a fair English lady there, and the troubles in which this involves him, are told with much daintiness of style. Of novels which are in a manner "problem novels," *The Redemption of David Corson* and *The Web of Life* may be mentioned. *The Redemption of David Corson*, by Charles Frederic Goss, is a love story and a study in ethics. The problem which the novel attempts to solve is how a thoroughly disheartened and despairing man may accomplish by effort and suffering the redemption of his better self. In spite of a style often pedantic and of situations somewhat melodramatic, the interest of the story is maintained throughout. In *The Web of Life* Robert Herrick endeavors by means of an account of the Chicago strike of 1893 to give a comprehensive survey of American industrial conditions. The problems also of "free love" and of bohemianism *vs.* conventionalism are enlarged upon. The canvas of the novel is thus very large. The book is indeed rather a study of social conditions than a "problem" novel, though the "problem" is somewhat melodramatically worked out. *Eben Holden*, by Irving Bacheller, is a character story, modelled apparently after *David Harum*. It has no definite or well-sustained plot. The scene is laid largely in northern New York, and the characters also are drawn from that region. Eben Holden, the hero, is supposed to be a witty, wise, and generous old man, with a heart overflowing with kindness. The account given of the personality of Horace Greeley is of much interest.

The Powers That Pry, by Josiah Flynt and Francis Walton, is a study of criminals, mainly dealing with their relations to the police, and setting forth the secret understanding of the outlaws with the agents of the law. In *The Master Christian* Marie Corelli makes an onslaught upon the Papacy and all that is connected therewith. The story displays the emotionalism and also the dramatic ability which have previously distinguished this author. *Quisanté*, by Anthony Hope, written in that author's nervous, picturesque style, proved one of the best selling books of the year in England. *The Farringdons*, by Ellen Thorneycroft Fowler, is a story of social

life in England. It displays the wit and brightness for which Miss Fowler is well known, and also well-put ironies at the expense of society shams. There is more tenderness and a greater depth in this novel than in Miss Fowler's earlier work. Dr. S. Weir Mitchell's latest book, *Dr. North and His Friends*, is a carefully wrought study of a set of characters which are apparently, in Dr. Mitchell's eyes, about what men and women ought to be: learned, refined, pharisaical. The conquest of the friendship of these people by a vigorous, unscrupulous, uncultivated railroad man is the main plot of the book. Considered from the point of view of a lover of literature this is one of the admirable books of the year, but it is hardly adapted to the tastes of those who like and demand thrilling situations. Mrs. Flora Ann Steel's *Hosts of the Lord* is perhaps not as rich in color as her other tales of life in India; nevertheless, it is a serious description of such minor revolts as the English authorities have often had to meet; moreover, the story proceeds rapidly and absorbingly.

History and Travel.—Stephen Crane's *Great Battles of the World* is less vivid and more uneven than most of his writing. Yet occasionally there is a constraining energy, which recalls *The Red Badge of Courage*. *The Great Battles* includes some of Crane's last work. Edward Eggleston's *Transit of Civilization* describes the point of view from which early American settlers estimated the world and their own conduct. The entire work evinces minute examination of sources and candor of judgment. *The History of Colonization*, by H. C. Morris, takes up a pertinent theme in a comprehensive and popular fashion. It has been pointed out that its chief defect consists in reliance upon antiquated authorities. The title *Spanish Highways and Byways* may be misleading as to the real character of Miss Katherine Lee Bates's new publication. For the book embodies more than idle notes by a summer stroller. Special attention is given to the national ballad poetry, many specimens of which are excellently translated. *Italian Cities*, E. H. and E. W. Blashfield, is a new volume in a familiar manner. A fine series of black-and-white illustrations supplement an unpretentious record of cultured and discriminative sightseeing. *Travels in England*, by Richard Le Gallienne, are vivacious, and contain almost as much about Le Gallienne as about England. Winston Spencer-Churchill's *London to Ladysmith via Pretoria* mingles the author's own exciting adventures with discussions of the English campaign. General Buller gains nothing in reputation from this narrative. Of the Boers, Mr. Churchill speaks kindly. So, for that matter, does Richard Harding Davis in his *With Both Armies in South Africa*. Indeed, this clever correspondent leaves no doubt as to his sympathies. The book includes material previously supplied to *Scribner's Magazine*. A third volume associated with the same events is *From Cape Town to Ladysmith*, by the late G. W. Stevens. It has been thought by many to mark the highest attainment of Mr. Stevens in his terse and energetic style. The author originally contemplated a longer work, of which this fragment was to form a portion. Out of the mass of heterogeneous misinformation on China four volumes may be selected as likely to be more helpful than others. The first of these is Elizabeth R. Scidmore's *China, the Long-lived Empire*, which, taking the reader beyond the barriers of treaty ports, renews the old attempt to penetrate that incomprehensible thing, Chinese character. This forms a background for Mr. Chester Holcombe's *The Real Chinese Question*, which thoroughly reviews the whole field of foreign diplomacy and aggression in China. For the continued existence of China, according to Mr. Holcombe, the humanity or the greed of Christendom is alone responsible. Dr. W. A. P. Martin, in *The Siege of Peking*, hurriedly dictated to meet a popular demand for information with regard to the struggle in China, writes from the point of view of a witness. In *An American Engineer in China* William B. Parsons discusses China's future from the standpoint of industrial and commercial growth. John R. Spears, in *A History of the American Slave Trade*, has vividly set forth the cruelty of our ancestors toward the captives from Africa. Dr. F. A. Cook has made an attractive addition to the literature of the polar zones in his *Through the First Antarctic Night*, a record of the experiences of the first human beings to pass a winter beyond the Antarctic Circle. *The History of the United States Naval Academy*, by Park Benjamin, should also be mentioned.

Essays and Criticism.—*Shadowings*, by Lafcadio Hearn, paraphrases many fanciful and grotesque stories from the Japanese, and contains also a new group of characteristic essays and sketches by the author. The book is by no means a profound study of Japanese civilization, yet to an understanding of some fundamental phases of that civilization it does incidentally contribute. As the title would indicate, the *Literary History of America*, by Professor Barrett Wendell, shows the political and social life of successive periods as represented in the literature contemporaneous therewith. It may be startling to see Holmes styled an American Voltaire; but the treatment of Emerson, for example, is thoroughly judicial. For attacks made against the work by reason of alleged unfairness to the Western school there is

apparently no warrant. The main thought in this book is the comparison of the American and English literatures, showing for one thing the Elizabethan vigor which has inspired American writers. The *War and Policy* of Spenser Wilkinson declares that the gradual change in warfare has been the result of a corresponding change, not in science, but in politics. It constantly urges Great Britain to maintain adequate armament as the only security of world empire. The portion dealing with questions of the American Civil War has been accused of frequent inaccuracy. Mr. John Burroughs contributes two volumes of differing character. *Squirrels and Other Fur-Bearers*, in his accustomed field, displays a microscopic observation and a delicacy of insight inevitable as of old. *The Light of Day* discusses poetry, religion, and other matters from the standpoint of a naturalist. Professor G. E. Woodberry's *Makers of Literature* is chiefly composed of reprinted matter, but contains some new appreciations. The work in general seeks no striking theory, but displays a wide extent of reading, a sanity, and a stylistic distinction, which make each essay a separate delight. *Stage-Coach and Tavern Days*, by Alice Morse Earle, is an entertaining, though not overcritical, picture of certain bygone conditions of American life. *The Evolution of the English Novel*, by F. H. Stoddard, rejects, in general, the notion of literary development, according to which one school is made directly to continue the progress of its predecessor. No particular uniqueness can be claimed for the broader outlines of the work, but the author with some reluctance defends the curious hypothesis that the novel must become scientific. *The Ways of Men*, by Eliot Gregory, chronicles further observations by "An Idler"—observations free from cynicism, and filled with spontaneous laughter. The essays are, however, uneven in quality. *Joseph Glanvill*, by Dr. Ferris Greenslet, is properly a series of studies in certain phases of seventeenth-century society, for which Glanvill serves as a means of correlation. Mr. E. S. Martin is familiarly known as the editor of the "Busy World" column of *Harper's Weekly*. His *Lucid Intervals* is, like his editorials, sensible, pointed, and enlivened with genial raillery. Professor Lewis E. Gates, whose work is one of the most hopeful signs in American criticism, now follows his *Three Studies in Literature with Studies and Appreciations*, which in sureness of insight, unerring sympathy, and delicacy of diction leaves little to be desired. It includes essays on "The Romantic Movement," "Taine's Influence as a Critic," and other topics. *Practical Agitation*, by J. J. Chapman, seeks to show how in politics and in journalism more may be done for mankind at large by unswerving adherence to principle than by compromise or concession. The work is comparable to the author's *Causes and Consequences*, and raises a like incisive appeal. Albert Russell Wallace, the well-known exponent of Darwinism, publishes *Studies, Scientific and Social*. Like all Mr. Wallace's work, these papers are marked by a shrewd speculation which is nothing if not self-confident. Captain A. T. Mahan, in the *Problem of Asia*, seeks to remove all detail which may obstruct a clear perception of the bearing of past history upon present questions. To the three principal sections, reprinted from *Harper's* and the *North American*, is appended another, entitled "Merits of the Transvaal Dispute." Mr. D. D. Addison—the biographer of Lucy Larcom—has rendered a distinct service by *The Clergy in American Life and Letters*. The purpose of the work is sufficiently explained by its title.

Biography.—Up to the time of the appearance of Mr. A. C. Buell's *Paul Jones* well-nigh nothing had been done to commemorate the patriotic service of the great sea-fighter. For this neglect there is now atonement by Mr. Buell in two careful volumes, whose value is enhanced by an expert knowledge of matters nautical. In *Napoleon: The Last Phase*, Lord Rosebery offers an estimate as clear and compact as his own public addresses. As if essaying reparation, he severely arraigns the stupidity of English officials in their treatment of the imperial captive. Oliver Cromwell is the theme of studies by Charles Harding Firth, Theodore Roosevelt, and John Morley. Mr. Firth's book is mainly remarkable for the new light it throws on Cromwell's military operations. Mr. Roosevelt's work, an enthusiastic study of the protector, is enlivened by comparisons of military achievements with modern military operations. Mr. Morley's is a philosophical study of Cromwell. His history is not as accurate as that of Mr. Firth, who had access to documents revealing hitherto unknown details with regard to Cromwell's manœuvres; but his estimate of Cromwell has been deemed the most discriminating ever presented. *The Life of Edward Fitz-Gerald*, by John Glyde, draws largely upon the narratives of acquaintances of the crotchety old scholar. Hence, although possessing scant literary merit, it is undeniably informing. *The Rossettis*, E. L. Cary, differs in method and scope from any other publication on the same subject, and introduces novel features of illustration and bibliography. A. W. Jackson's *James Martineau* is a very effective exposition of a great intellect. Most thorough is the portion concerned with Martineau as the philosopher of religion. The first suitable life in any tongue of *Theodore Beza* is that by Henry Martyn Baird, well known for a history of the Huguenots. Entering thus an unappropriated field, Dr. Baird has with customary skill produced

a convincing presentment of the friend of Calvin and counsellor of Henry IV. The *Milton* of Walter Raleigh, advancing several interesting theses, is brilliant in style, and at its best in dealing with Miltonic versification. In his *Life of Francis Parkman*, Charles W. Farnham, in spite of the inadequacy of sources, has succeeded in a definite portrayal of the personality and work of his subject. From public records of Texas and Tennessee Miss Sarah Barnwell Elliott has collected material for *Sam Houston*—a picturesque delineation of a picturesque figure. Perhaps the most striking thing about Mr. W. D. Howells's *Literary Friends and Acquaintance* is not so much its discriminating praise as its pervasive affability. Particularly entertaining is the description of the Cambridge circle of the later sixties, with a special chapter on Lowell. *Military Reminiscences of the Civil War*, by Major-General J. D. Cox, tells how the problems and events of a momentous period confronted an active participant. It fully discusses the strategy of various campaigns in a form much superior to that of most memoirs of the type. *Robert Browning*, by Arthur Waugh, is an addition to the booklet biographies of the *Westminster* series. With deftness of structure, but without elaboration, it casts into miniature the generally accepted views of larger volumes. It may be objected that in his *Theodore Parker* Dr. John W. Chadwick devotes to religious views space more justly occupied by labors in antislavery reform. It must, nevertheless, be admitted that the great preacher's robust optimism appears in splendid relief from page to page. *The Life and Letters of Thomas H. Huxley*, by his son, Mr. Leonard Huxley, was regarded by many as the most important biography of the year. Though some found fault with its excess of detail, it was generally admitted to be an unusually lifelike portrayal, both of the man and of his work. No more worthy monument to the memory of Phillips Brooks could be devised than Rev. A. V. G. Allen's sumptuous volumes. Simple as Brooks's character seems from without, Dr. Allen confesses that nearer examination reveals complexities whose resolution is by no means easy. For the Philadelphia pastorate, too likely to be disregarded, fitting proportion is maintained. *Henry Hart Milman, Dean of St. Paul's*, is the title of a life long withheld and now compressed by Mr. Arthur Milman, the son, into a single volume. To that majority of readers who know Milman only as prose writer this volume will depict him as likewise poet and preacher. Minute as is the self-revelation of Coventry Patmore in his published works, the straightforward *Memoirs and Correspondence*, by Basil Champneys, contributes from both document and personal knowledge a further store of varied information. It is to be hoped, with the editor, that it may lead to a larger consideration of Patmore's poetry. The first use of the papers of Charles F. Adams was made in the *Life* by C. F. Adams, Jr., who also announces a subsequent extended compilation. Canon H. D. Rawnley has much that is both serious and diverting to narrate in his thoroughly readable *Memoires of the Tennysons*. His finely modulated style adds greatly to the intrinsic charm of these intimate recollections. Mention must also be made of Robert Dunlop's *Daniel O'Connell*, of Lindsay Swift's *Brook Farm: Its Members, Scholars, and Visitors*, and of three biographies of Dwight L. Moody. For works on Ruskin, see *RUSKIN*.

Poetry.—A survey of poetry for 1900 happily shows that the writings of Rudyard Kipling, notwithstanding their popularity, have led to but little imitation. Among collections, Mr. E. C. Stedman's *American Anthology* occupies a solitary place. An important recommendation is found in the fact that the space given to prominent poets whose works already exist in complete and careful editions is abbreviated in favor of humbler and less accessible disciples. Of individual volumes, a round dozen seem worthy of notice. Probably the most distinguished is the *Herod* of Mr. Stephen Phillips, who in these days joins with M. Rostand as protagonist of the poetic drama. Controlled by an elevated, artistic execution equal to that of *Paolo and Francesca*, *Herod* reveals a yet firmer accentuation of character. It was presented at London by Beerbohm Tree, and is promised by Richard Mansfield for America. From Italy comes *The Hidden Servants* of Francesca Alexander, whose *Story of Ida* John Ruskin prefaced, and whose *Roadside Songs of Tuscany* he edited. Miss Alexander's rhymed legends of her foster-land have been praised for their sincerity and freedom from self-consciousness. In the volume of *Last Songs from Vagabondia*, by Mr. Bliss Carman and the late Richard Hovey, the pieces, like those of the two preceding *Vagabondia* volumes, are so characteristic as hardly to require initials in the contents table. They include a threnody by Mr. Carman to the memory of his lost friend and collaborator. In *Fortune and Men's Eyes*, Josephine P. Peabody, author of *The Wayfarers*, publishes lyrics, some of which have attracted notice in many magazines; and to these adds a clever little play, which, laid in the London of 1599, introduces one Master W. S., of the Lord Chamberlain's company. *Home-Folks*, by James Whitcomb Riley, mingles Hoosier dialect with polite English, humor with pathos, in the author's friendly and familiar manner. *Orpheus, a Masque*—Mrs. A. A. Fields—is a fresh treatment of the Orpheus and Eurydice myth. Its action depicts the grief, beguilement, and burial of the hero, and the Muses'

recovery of his lyre. Not even Mr. Dunbar appears to have described the real antebellum negro as deftly as has Howard Weeden, whose *Bandanna Ballads* has now been followed by *Songs of the Old South*. The *Toiling of Felix*, by Dr. Henry Van Dyke, has been praised for that appreciation of nature which has inspired much of his prose. Mr. A. S. Hardy, the novelist and United States minister to Greece, has given us in *Songs of Two* a small number of poems of a meditative cast and a quiet precision of utterance. Mr. Lloyd Mifflin published *Fields of Dawn and Later Sonnets*. The sonnet long ago ceased to offer difficulties to Mr. Mifflin, who preserves a sustained excellence through a hundred specimens of this straitened form. *Afterglow*, by Mrs. J. C. R. Dorr, also deserves mention. *The Mystery of Godliness*, by F. B. Money-Coutts, well exhibits the writer's strength, which is in classic repose, and his failing, which is in a dry lapse into didacticism.

Books for Children.—That most juvenilia should be woefully and uniformly uninspired is, perhaps, to be expected. That they should so generally as heretofore lack any sort of adaptability is a matter which recent workers in this field seem disinclined to pardon or to leave unremedied. The year past shows the usual average of ragamuffins achieving riches, not to mention various machine-made adventures, in which the author, breasting current history, hurries on his hero to Manila and Peking. But there remains a creditable list of volumes which to greater or less degree possess distinctive value. For instance, here is the unwearied Kirk Munroe with *Under the Great Bear*, which wrecks a young engineer in Northern seas, and eventually makes him manager of Newfoundland mines. *The Last of the Flatboats*, a capital story by Mr. George Cary Eggleston, whose intimate knowledge of early life on the Mississippi rivals Mark Twain's. To his long series of volumes in other colors Mr. Andrew Lang now adds a *Gray Fairy-Book*. Here range the fancies of many peoples, admirably selected, painstakingly done into English, and richly illustrated. The thirty-five stories contribute to the permanent fund of fairy literature. Mr. Charles Battell Loomis possesses the faculty of being consistently and cheerfully nonsensical. His *Yankee Enchantments* find their *locus operandi* in New England, and magical material in electric cars and liquid air. Katherine Pyle's *Christmas Angel* discovers toy-land. In verse, Miss Helen Hay's *Little Boy Book* reveals delicacy of touch and a frequent quaintness of imagery. Professor Isaac T. Headland, of Peking University, has published some translations, styled by him *Chinese Mother Goose Rhymes*. In the *Wild Animal Play for Children* (with alternate text for the very young), Mr. Ernest Seton-Thompson provides for the impersonation of characters from his popular *Wild Animals I Have Known*. Mr. Oliver Herford has transferred his animals and his gossiping roses, peonies, lilies, and violets from various periodicals to a small volume called *Overheard in a Garden*. Many of the poems in this collection are pathetic rather than witty—as much of Mr. Herford's verse has been. Certain critics deem the author's pathos even better than his wit.

Publications in the United States.—In Great Britain 7149 books were published during the year, of which 5760 were new books, and 1389 new editions. The following table shows by classes the total number of books published in the United States during the years 1899 and 1900:

CLASSES.	1899.		1900.	
	New books.	New editions.	New books.	New editions.
Fiction.....	749	183	616	663
Law.....	454	35	513	30
Juvenile.....	434	14	482	45
Education.....	887	32	431	210
Theology and Religion.....	393	27	411	37
Political and Social Science.....	226	13	258	11
Biography, Correspondence.....	288	22	225	49
History.....	246	23	221	36
Poetry and Drama.....	302	31	192	206
Literary and Miscellaneous Works.....	304	42	187	356
Physical and Mathematical Science.....	176	28	160	34
Descriptive Geography, Travel.....	190	28	150	43
Medicine and Hygiene.....	120	33	146	72
Fine Arts and Gift Books.....	194	20	145	22
Useful Arts.....	99	34	129	31
Philosophy.....	63	10	91	10
Domestic and Rural.....	55	3	64	12
Sports and Amusements.....	43	5	44	7
Humor and Satire.....	26	1	32	2
Totals.....	4,749	572 4,749	4,490	1,866 4,490
		5,321		6,356

LOBSTER INDUSTRY. See FISH AND FISHERIES (paragraph United States Fish Commission).

LOCH, Baron, HENRY BROUGHAM LOCH, G.C.B., G.C.M.G., D.C.L., formerly governor of Cape Colony and British high commissioner for South Africa, died in London June 20, 1900, at the age of 73. After service in both the navy and army, he became in 1857 an attaché of the Earl of Elgin's mission to China. In the Chinese war which was waged in 1860, Loch was taken prisoner while under a flag of truce and carried about in a cage by his captors and subjected to many indignities. After his release his services included the lieutenant-governorship of the Isle of Man for 18 years; the governorship of Victoria, 1884-89, and British commissionership for South Africa, 1889-95. He was created a peer in the latter year. He was a warm friend of Dr. Jameson and was considered a high authority on South African affairs.

LOCKHART, WILLIAM EWART, R.S.A., artist, died in London February 9, 1900, at the age of 53 years. He was a native of Dumfriesshire. In 1870 he was elected an associate of the Royal Scottish Academy, and eight years later was given full membership. For many years his works were admired in the annual exhibitions at Edinburgh. Commissioned in 1887 to paint the jubilee services in Westminster Abbey, he came to London, where he thereafter resided. He was regarded as an artist of considerable merit.

LOCKHART, Sir WILLIAM STEPHEN ALEXANDER, K.C.B., K.C.S.I., British commander-in-chief in India, died at Calcutta March 18, 1900. His recognized ability as a skilful commander and courageous leader rendered his death a severe blow to the British military service. He was born in Lanarkshire, Scotland, in 1841, and entered the Indian army in 1858 as a lieutenant in the Forty-fourth Bengal Native Infantry. Promotion came as follows: Captain, 1868; major, 1877; colonel, 1883; brigadier-general, 1887; major-general, 1891; lieutenant-general, 1894. Lockhart had experience in both arms of the service, for in 1864-66 he took a creditable part in the Bhutan campaign as adjutant of the Fourteenth Bengal Cavalry. He was aide-de-camp to Brigadier-General Merewether in the Abyssinia campaign, and served with distinction at the capture of Magdala. He also had a staff position with the Hazara Field Force in the Black Mountains. While on leave of absence in 1876 he visited Acheen, Sumatra, and there took part with the Dutch in their assault on Lamboda with such gallantry that they awarded him a medal and clasp. He fell ill, however, with fever and it is said his life was saved only through that force of will which almost always enabled him to carry his point or accomplish a project. In the Afghan War of 1879-80 he acted as road commandant in the Khyber Pass, and afterward as assistant quartermaster-general to General Sir Frederick S. Roberts during the operations before Kabul, and for meritorious services he was created a C.B. and received a medal and clasp. Sent on a mission to Chitral a few years after, by a fine combination of diplomacy and firmness he succeeded in pacifying the highland natives. His next service was the command of a brigade in Burmah, which brought him promotion to K.C.B. After acting as assistant military secretary for Indian affairs at Simla he was placed in command of both Miranzai expeditions of 1891, commanded the Isazai Field Force, and was appointed commander of the Punjab, in which position he saw active service in Waziristan. The great campaign of his life came in 1897, when, at the head of 40,000 British troops, he was sent to the northwest frontier to subdue the rebellious Afridis, Momands, and other fierce tribes. Wisely adapting his tactics to the exceedingly difficult country and the crafty guerilla warfare of the natives, he brought the war to a successful end. For this service he was appointed to succeed General Sir George Stewart White as commander-in-chief in India.

LOCOMOTIVES. See RAILWAYS (paragraph Locomotives).

LOCUST PLAGUE. See ENTOMOLOGY.

LODGING HOUSES, MUNICIPAL. See MUNICIPAL LODGING HOUSES.

LOEB, JACQUES, physiologist and professor in the University of Chicago, has during the year made further progress with experiments in artificial parthenogenesis, and has succeeded in producing larvæ from the artificially fertilized eggs of animals other than the sea-urchins, which he used in his earlier investigations. Professor Loeb was born in Germany April 7, 1859, and studied at the universities of Berlin, Munich, and Strassburg, receiving the degree of Doctor of Medicine from the last-named institution in 1884 and passing the state examination in 1885. He served as assistant in physiology at the University of Würzburg from 1886 to 1888, and at Strassburg from 1888 to 1890. He studied at Naples in 1890 and 1891, and came to America to become associate in physiology at Bryn Mawr College, where he remained until called to the chair of assistant professor of physiology in the University of Chicago in 1892. Three years later he was made associate professor and in

1900 professor, holding also the professorship of physiology at the Rush Medical College. Since 1892 Professor Loeb has been in charge of the physiological department of the Marine Biological Laboratory at Wood's Hole, Mass. Professor Loeb in 1899 was successful in the artificial production of larvæ from the unfertilized eggs of sea-urchins. This was accomplished by carefully extracting the ovaries with sterilized instruments, and then placing them in sterilized sea water containing a solution of magnesium chloride. The eggs developed into blastulæ, or larvæ, and could be observed swimming around within twenty-four hours.

As a result of his experiments with sea-urchins Professor Loeb concludes that by an increase in the osmotic pressure of the surrounding solution the unfertilized eggs can be developed into normal embryos and larvæ. The increase in osmotic pressure demanded can be produced by electrolytes as well as by non-conductors, so that it is probable that the parthenogenetic development is caused by the egg losing a certain amount of water.

During the summer of 1900 Professor Loeb succeeded in obtaining successful results with other animals. He was able to produce artificial parthenogenesis in the case of starfish (*asterias*) and in worms (*chaetopterus*). With the worms it was found possible to secure the desired result either by increasing the concentration of the solution or by altering the chemical composition of the sea water. Professor Loeb's experiments have been verified by other zoologists, and progress from this point forward is to be expected.

The chief publications embodying the results of Professor Loeb's experiments are as follows: *Animal Heliotropism and its Identity with the Heliotropism of Plants* (1890); *Organization and Growth* (1892); *Limits of Divisibility of Living Matter* (1894); *Comparative Physiology of the Brain and Comparative Psychology* (1900); *Physiological Effects of Ions* (1897-1901), and *Artificial Parthenogenesis* (1899-01). See BIOLOGY (paragraph Artificial Parthenogenesis).

LONDESBOROUGH, First Earl of, WILLIAM HENRY FORESTER DENISON, died in London April 19, 1900. He was born in 1834. As a Liberal he represented Beverly in Parliament from 1857 to 1859, and Scarborough in 1859-60. In the latter year he succeeded his father, the first Baron Londesborough, and at the jubilee of 1887 was created an earl. He was a great landlord, owning more than 52,000 acres, mostly in northern England. His son, Viscount Raincliffe, succeeded to the title.

LONDON Government Act of 1899 went into effect November 1, 1900. See article GREAT BRITAIN (paragraph London Government Act).

LONDON, JACK, a young American author, was born in San Francisco, Cal., in 1876, and after varied adventures as newsboy, seaman, and seal hunter in Russian waters, studied for a time at the University of California. A year spent in the Klondike gold region, beginning with the autumn of 1897, furnished material for his subsequent literary work. His first story was contained in the *Overland Monthly* for January, 1899. Mr. London—a sort of Bret Harte of the Arctic circle—published in 1900 the collection *The Son of the Wolf*, penetrative studies of grim pioneer life in the dark silences of a far Northern winter.

LONG-DISTANCE AND SUBMARINE TELEPHONY. See PHYSICS.

LOTHIAN, Ninth Marquess of, SCHOMBERG HENRY KERR, K.T., LL.D., died January 17, 1900. He was born December, 2, 1833. Educated at Glenalmond, Eton, and New College, Oxford, he received in 1857 an appointment on Sir J. Outram's staff in Persia, and in 1862 was made second secretary at Frankfort. In 1865 he was transferred to a similar position, first in Madrid and then in Vienna. He succeeded his brother to the title in 1870. He was keeper of the privy seal of Scotland from 1874 to the time of his death, and secretary for Scotland and keeper of the great seal of Scotland from 1887 to 1892. His second son, Lord Jedburgh, succeeds to the title.

LOUIS, Sir CHARLES, British major-general, retired, died at Monaco February 6, 1900. Born in 1818, he joined the Royal Marines in 1837 and served in Syria, being present at d'Jouni and at the storming of Sidon. He took part in the Baltic expeditions of 1854-55, and was severely injured by an explosion. He retired from the service in 1873 and succeeded to the baronetcy in 1893.

LOUISIANA, a Gulf State of the United States, has an area of 48,720 square miles. The capital is Baton Rouge. Louisiana was admitted as a State April 30, 1812.

Agriculture.—The total commercial crop of cotton for the season 1899-1900 was 699,476 bales. Federal officials estimated the area devoted to cotton culture in 1900-01 at 1,285,000 acres, and the yield at 234 pounds of lint cotton per acre. The production of cane sugar in 1899-1900 was 132,000 long tons; and in 1898-99, 549,947.417 pounds. Molasses produced in 1898-99 amounted to 24,952,188 gallons, as compared

with 5,320,226 gallons for all the other Southern States combined. The following shows the production and value of other crops for the calendar year 1900: Corn, 24,702,598 bushels, \$12,351,299; oats, 614,142 bushels, \$245,657; potatoes, 539,630 bushels, \$426,308, and hay, 50,302 tons, \$472,839. The *Bulletin* of the National Association of Wool Manufacturers estimates the wool clip for 1900 as follows: Number of sheep, 105,621; wool, washed and unwashed, 475,295 pounds; wool, scoured, 237,648 pounds.

Industries.—The total number of cigar factories reporting for the calendar year 1899 was 140, and tobacco factories, 60; and their combined output was 46,137,986 cigars, 45,472,160 cigarettes, and 1,932,154 pounds of tobacco, of which 1,926,672 pounds were smoking tobacco. Shipments of yellow-pine lumber from January 1 to December 1, 1900, aggregated 316,945,750 feet, and the total amount cut during the same period was 352,179,569 feet. There were 5 grain and fruit distilleries in operation during the fiscal year ending June 30, 1900; the amount of distilled spirits gauged was 3,237,695 gallons, and of fermented liquors produced, 236,083 barrels. The amount of spirits rectified in Louisiana and Mississippi, which constitute one collection district for internal revenue, was 901,942 gallons. Quarrying in 1899 yielded sandstone to the value of about \$200,000.

Commerce.—During the fiscal year ending June 30, 1900, the imports of merchandise at New Orleans aggregated in value \$17,490,811, an increase in a year of \$5,583,152; and the exports, \$115,858,764, an increase of \$27,675,886. The movement of the precious metals was: Gold, imports, \$373,986; exports, none; silver, imports, \$245,081; exports, \$1436. The total foreign trade of Louisiana ports was \$133,970,123, an increase for the year of \$33,248,893. The number and tonnage of the vessels in foreign trade entered and cleared at the port of New Orleans was: Entered, 1220, of 1,675,434 tons; cleared, 1187, of 1,720,008 tons; total, 2407, of 3,395,442 tons.

Railways.—The new railway construction for the calendar year 1900 aggregated 155.6 miles, giving the State a total mileage of 2833.34.

Banks.—On October 31, 1900, there were 21 national banks in operation and 8 in liquidation. The active capital aggregated \$3,292,750; circulation, \$2,220,289; deposits, \$20,886,496, and reserve, \$5,590,115. The State banks June 30, 1900, numbered 56, and had capital, \$3,630,210; deposits, \$12,683,333, and resources, \$18,137,832; and stock savings banks, 2, with capital, \$200,000; depositors, 10,518; deposits, \$3,284,892, and resources, \$3,863,507. The exchanges at the New Orleans clearing house for the year ending September 30, 1900, aggregated \$500,671,071, an increase over the preceding year of 65,714,770.

Finances.—The cash balances on hand January 1, 1899, aggregated \$764,992; total receipts during 1899, \$3,111,072; expenditures, \$2,914,509, leaving balances in the treasury January 1, 1900, amounting to \$961,555. On April 1, 1900, the bonded debt of the State was \$10,877,800, the same as in the preceding year. The total assessed valuation of property in 1899 was \$267,723,572, an increase over 1898 of \$6,177,704. This increase is due in large measure to an improved method of assessing railroad, telegraph, and telephone property. The State tax levy is 6 mills.

National Guard.—The Louisiana State National Guard consists of 16 staff officers, 39 cavalry, 678 artillery, and 780 infantry. There is no limit to the total number of troops authorized. The total number in the State liable to military service is 140,000. The State appropriation for military purposes is \$21,000.

Education.—The school census of 1899 gave a total enumeration of 404,757. The enrolment in the public schools for the year 1898-99 was 196,169, and the average daily attendance, 146,323. There were 4157 teachers, 3302 buildings used as school-houses, and public school property valued at \$1,125,000. The school revenue was \$1,126,112, and expenditures the same, of which \$944,135 was for teachers' and superintendents' salaries. The average expenditure per pupil for the whole school year was \$7.70. There were 21 high schools, with 98 teachers and 1825 students; 31 private secondary schools, with 124 teachers and 1210 students, and 2 public normal schools, with 25 teachers and 445 students in normal courses; 9 colleges and universities for men and for both sexes reported 139 professors and instructors, 1486 students, and a total income of \$233,954; and 2 colleges for women reported 18 professors and instructors, 149 students, and a total income of \$16,450. The professional schools comprised 1 theological school, with 3 instructors and 23 students; 1 law school, with 5 instructors and 71 students, and 2 medical schools, with 21 instructors and 392 students.

Population.—According to the United States census, the population in 1890 was 1,118,587; in 1900, 1,381,625; increase for the decade, 263,038, or 23.5 per cent. The only large city is New Orleans, whose population in 1900 was 287,104.

Legislation.—An act was approved on July 6 for the purpose of carrying out the intention of that section of the State constitution (1898) which provided that the General Assembly should assume, on behalf of the State, control of the State Penitentiary, and should provide for the employment of convicts, under State super-

vision, on works of a public nature. Under the new system, which was to go into effect March 3, 1901, when the lease of the penitentiary and its inmates to S. L. James expired, control is vested in a board of three commissioners. The most interesting feature of the bill was that relating to the morals and reformation of the convicts. The commissioners were directed to keep the blacks and whites separate so far as practicable, and to enact rules for the grading and classifying of the convicts according to the most modern and enlightened system of reformation. Harsh and cruel punishments were forbidden, and the board was directed to take measures to insure the right of a convict to communicate directly with the board without the interference of any officer. The board was authorized to make contracts for the building of roads, levees, and other works of a public nature, like any private contractor, the work to be done by the convicts. An act, approved July 5, authorized the Board of Commissioners of the Red River, Atchafalaya, and Bayou Boeuf levee district to issue, for drainage and other purposes, \$250,000 in 5 per cent. fifty-year bonds, at a discount from par of not more than 10 per cent. By other acts Congress was memorialized to appropriate \$100,000 to remove obstructions from and dredge the Bayou Boeuf and Bayou Cocodril, and also \$100,000 to improve and make navigable Bayou Grosse Tete. An act, approved on July 5, required all retail business houses in Louisiana in which women were employed to furnish chairs or seats for their employees, placed in such accessible positions that the clerks might use them while actually waiting on customers, and providing further that all such business houses should allow at least thirty minutes to their employees for lunch. An act designed to make more effective the work of the railroad commission provided that the commission might summon witnesses before it, and that persons could be fined or imprisoned for contempt of the commission in the same manner as for contempt of court. An act providing for the compilation and distribution by the commissioner of agriculture from time to time of information of value to the commercial, industrial, and agricultural interests of the State. A memorial to Congress, approved on June 7, petitioned that body to submit to the Legislatures of the several States an amendment to the Constitution providing for the election of the United States senators by direct vote of the people. The attitude of Louisiana upon the question of negro suffrage was shown on June 27, when a resolution was passed congratulating the Hon. Bourke Cochran, of New York, upon his speech at the Montgomery conference, held in May, in Alabama, in which Mr. Cochran had strongly advocated that the Fifteenth Amendment to the Constitution granting suffrage rights to the negro be repealed. An act was passed providing for the appointment of a commissioner of labor statistics, who should collect and report annually upon "statistical details relating to all departments of labor in the State, especially in relation to the commercial, industrial, social, and sanitary condition of workingmen, and to the productive industries of the State." An act, approved July 11, provided that any municipality might expropriate any private electric light, gas, sewage, or water-works plant. If the price to be paid therefor could not be agreed upon between the city and the owners, commissioners were directed to be appointed by the court to decide the matter. In order to carry out the provisions of this act, the Legislature, on July 11, authorized any municipality, with the exception of New Orleans, provision for which had already been made, to issue bonds to a value not greater than 10 per cent. of the value of the assessed property in the district, and to levy special taxes for the payment of these bonds.

Banking Regulations.—An act was approved on July 6 in order to better insure the safety of depositors in banking houses and banks incorporated under the laws of the State. The act directed that in declaring dividends banks should carry over as a surplus fund at least one-tenth of the net profits succeeding the last previous dividend, and that they should continue to carry over this proportion of the net profits in declaring dividends until the accumulated surplus amounted to, at least, 20 per cent. of the capital stock. Banks were forbidden to withdraw at any time, either in the form of dividends or otherwise, any part of this capital stock or surplus. They were likewise forbidden to declare dividends exceeding the net profits for the time for which the dividends were declared. Officers and directors of banks who gave their assent to declaring any dividend whereby the capital and 20 per cent. surplus of the bank became impaired were made personally liable to the creditors, if the latter suffered loss thereby.

New Orleans.—The Municipal Improvement Association of New Orleans succeeded early in 1900 in insuring for New Orleans an adequate sewerage and drainage system. On June 6, 1899, the taxpayers of New Orleans, at the instance of the association, passed an ordinance providing for the appointment of a Sewerage and Water Board, with power to acquire, own, and construct for the benefit of the city the sewerage and water plants then established or to be thereafter established. Authority was given to the city to issue bonds for this purpose and to guarantee and eventually pay them by means of a tax of 2 mills levied upon real estate in the city

for a period of forty-three years. A special session of the State Legislature ratified the action taken by the city. It was found, however, that under the new State constitution New Orleans could not legally issue the bonds, and an amendment to the State constitution was, therefore, voted upon and carried at the general State election on April 17, 1900. As a result of this election New Orleans was enabled to issue bonds to the extent of \$14,000,000 and to put its systems immediately under way. Upon the drainage system, as distinct from the proposed sewerage system, much has already been done: a central electrical power plant has been equipped, and two of the total of eight pumping stations are in operation. Drains, connecting with all points of flow, will empty into interlinking canals and ditches, divided into separate sections to prevent accident and to facilitate pumping. The water will then be pumped into Bayou Bienvenu, and from there carried by the tide into Lake Borgne.

An argument for the municipal ownership of water-works was furnished to New Orleans by the evidence taken in the suit brought by the attorney-general at the direction of the Legislature to deprive the New Orleans Water Works Company of its charter. This charter was given to the company in 1877 for a period of fifty years on the contract of the company to furnish to New Orleans "an adequate supply of pure water." A legislative committee appointed to investigate the matter found that the water supply was neither pure nor adequate, and suit was then commenced. The following facts, as summarized in the *Annals of the American Academy*, were brought to light during the hearings of the case: (1) The company made several efforts to filter or otherwise purify the water of the Mississippi, but invariably failed to better its quality. (2) While there are 585 miles of inhabited streets in New Orleans, only 121 miles are furnished with any kind of water-mains, thus leaving 464 miles unprovided for. (3) Rates have been so high as to be almost prohibitive for people of humble means, and in times of drought the company has opened many of its plugs and given in charity what it would have been wiser to make the people pay for at a moderate rate. (4) The owner of a large cotton mill found his bill for water so high—it was \$5500 a year—that he bored artesian wells and refused to take any more water from the company. (5) The population of the city has almost doubled since 1877, but the company, after cutting off 2000 hydrants for non-payment of dues and other causes, has during the last 12 years brought into use only 1000 additional hydrants.

During the pendency of the suit a company which had obtained optional control over the Water Company offered, if the suit was not further pressed, to supply the city with water 10 per cent. cheaper, to build additional mains, and to sell the whole plant to New Orleans in 1906 or in 1916.

Elections.—The State elections held in Louisiana on April 12, 1900, were of especial interest as being the first held since the suffrage clause of the constitution went into effect. Under this clause only those were allowed to vote who could read and write, or who owned substantial taxable property, or who were descended from men who voted at the time of the Civil War. These limitations of the franchise—which acted to practically disenfranchise the negroes—reduced the registration of voters from 250,000 the previous year* to 124,000, of which latter number only about 7000 were negroes. The total vote cast was less than 80,000. There were three tickets in the field—the Democratic, the Republican, and a Fusion ticket. The Democratic nominee for governor polled 60,205 votes, while the combined votes for E. S. Reems, the Republican candidate, and for Donelson Caffery, Jr., the Populist and Republican fusion candidate, amounted only to about 17,000. The six representatives of Louisiana in the 56th Congress were all returned to the 57th Congress. The State Legislature elected in April consists, it is stated, of Democrats throughout, with the exception of one Republican in the House. On May 22 the Legislature, by a unanimous vote in each House, elected Murphy J. Foster (Dem.) to succeed Donelson Caffery (Dem.) in the Senate for the full term beginning March 4, 1901, and Samuel Douglas McEnery (Dem.) to succeed himself for the full term beginning March 4, 1903. In the national election McKinley received 14,233 votes, and Bryan, 53,671. In 1896 Bryan received 77,175 votes, and McKinley, 22,037. Bryan's plurality was thus cut down from 55,138 to 39,438.

State Officers and National Representatives.—State officers for 1900: Executive—governor, M. J. Foster; lieutenant-governor, R. H. Snyder; secretary of state, J. T. Michel; treasurer, A. V. Fournette; auditor, W. W. Heard; attorney-general, M. J. Cunningham; superintendent of education, J. V. Calhoun; adjutant-general, Allen Jumel; commissioner of agriculture, Leon Jastremski; commissioner of insurance, J. T. Michel—all Democrats.

Supreme Court: Chief Justice, F. T. Nicholls; associate justices, N. C. Blanchard, L. B. Watkins, J. A. Breaux, F. A. Monroe; clerk, T. McC. Hyman—all Democrats.

Congressional representatives for 1900 (56th Congress): A. Meyer (New Orleans), R. C. Davey (New Orleans), R. F. Broussard (New Iberia), Phanor Breazeale

(Natchitoches), J. E. Ransdell (Lake Providence), S. M. Robertson (Baton Rouge)—all Democrats.

Senators for 1900 (56th Congress): D. Caffery (until 1901) and S. D. McEnery (until 1903)—both Democrats.

State officers for 1901: Executive—governor, W. W. Heard; lieutenant-governor, Albert Estopinal; secretary of state, J. T. Michel; auditor, W. S. Frazee; treasurer, L. E. Smith; attorney-general, Walter Guion; superintendent of education, J. V. Calhoun—all Democrats.

Supreme Court: Same as for 1900.

Congressional representatives for 1901 (57th Congress): Same as for 1900.

Senators for 1901 (57th Congress): S. D. McEnery (until 1903) and M. J. Foster (until 1907)—both Democrats.

LOWE, EDWARD JOSEPH, F.R.S., English scientist and one of the founders of the Royal Meteorological Society, died March 10, 1900. He was born in Nottingham in 1825. He made a valuable series of daily meteorological observations from 1840 to 1882, invented the dry-powder tests for detecting ozone, and became an authority on ferns, being the discoverer of prothalli on the stalked frond-bearing reproductive organs. He was a fellow of several learned societies. Among his writings are *A Treatise on Atmospheric Phenomena*; *Beautiful Leaved Plants*; *Natural History of British and Exotic Ferns*; *New and Rare Ferns*; *Chronology of the Seasons*.

LOYAL LEGION, MILITARY ORDER OF THE, founded 1865 by officers and ex-officers who served in either branch of the service during the Civil War, is with the Society of the Cincinnati the most exclusive organization of its kind in the country. Membership descends to the eldest direct male lineal descendant. There were 9043 members on July 31, 1900, distributed among commanderies in 20 States and the District of Columbia. Commander-in-chief, Lieutenant-General John M. Schofield; registrar-in-chief, Brevet-Major William P. Huxford, Atlantic Building, Washington, D. C.

LUDLOW, GEORGE CRAIG, justice of the Supreme Court of New Jersey since 1895, and Democratic governor of the State in 1880, died December 18, 1900. He was born in 1830, graduated from Rutgers College in 1850, and became a successful lawyer at New Brunswick. In 1876 he was elected State senator, and in 1878 was made president of the Senate.

LUTHER, CARL THEODOR ROBERT, astronomer and director of the observatory at Düsseldorf, died February 15, 1900. He was born April 16, 1822, and in the early days of astronomy, before the discovery of Neptune, he was a member of the staff of the Berlin Observatory. In 1851 he became director of the observatory at Düsseldorf, and since that time with a small telescope has discovered twenty-four planetoids. In 1854 he was elected a foreign associate of the Royal Astronomical Society of Great Britain, and in 1855 Bonn University conferred on him the degree of Doctor of Philosophy. From the Paris Academy of Sciences he received the Lalande Prize seven times, and his portrait was placed with those of Hind and Goldschmidt on a medal struck by that academy to commemorate the completion of the discovery of the first one hundred planets.

LUTHERAN CHURCH IN THE UNITED STATES as an organization began with the establishment (1748) of the first synod or ministerium in Pennsylvania. The natural growth of the denomination, which has been remarkable, has been increased largely by immigration from Lutheran countries. Its entire strength at present (1900) is represented by 6810 ministers, 11,123 congregations, and 1,665,878 members, whose benevolent offerings reached a total of \$1,171,765.30. The Lutheran Church comprises 4 general bodies; 15 independent synods, of which 7 are German, 4 Norwegian, 2 Danish, 1 Icelandic, and 1 Finnish; a number of independent congregations, and a kindred body, Waldenstromians, who have made no recent reports. *General Synod*, organized 1821, almost exclusively English, reports 1226 ministers, 1568 congregations, and 194,442 members. *United Synod of the South*, organized 1862, also composed of English members, has 215 ministers, 390 congregations, and 38,639 members. *General Council*, organized 1867, comprising English, German, and Scandinavian elements, has 1256 ministers, 2019 congregations, and 370,409 members. *Synodical Conference*, organized 1872, almost exclusively German, reports 2029 ministers, 2650 congregations, and 581,029 members. The independent synods include 2084 ministers, 4496 congregations, and 481,359 members. The Lutherans, as a whole, control 115 educational institutions of all grades, with 760 professors and 12,836 students; these institutions own property valued at \$5,121,060, and have endowed funds amounting to \$1,545,745. The United Synod and the Synodical Conference held conventions in 1900; the General Synod and the General Council will meet in 1901.

LUTHER LEAGUE, a society of young people of the Lutheran Church, established for the furtherance of greater Christian activity. The society was founded in

1888, the first convention was held in 1895, and in 1899 there was an estimated membership of 70,000. President, William C. Stoeve, Philadelphia; secretary, C. G. Grauer, Buffalo, N. Y. The society has an official organ known as the *Luther League Review*. It holds conventions biennially. Motto, "In the church, of the church, for the church."

LUXEMBURG, a grand duchy of Europe, situated between Germany, Belgium, and France. It has an area of 998 square miles and a population of about 220,000 inhabitants, the majority of them Catholics. The capital of the duchy is Luxembourg, with a population of about 20,000 and considerable manufacturing interests. The duchy of Luxembourg formed part of the German Confederation from 1815 to 1867; in the latter year it was declared by the treaty of London to be neutral territory, and passed in 1890 to the Duke of Nassau. The duchy has a Chamber of Deputies, consisting of 45 members, elected directly by the cantons for 6 years. Agriculture is the main occupation of the inhabitants, about three-fourths of the population being engaged in agricultural pursuits. In 1899 the total value of the agricultural products was 76,346,394 francs, and of manufactures, 20,200,000 francs. Luxembourg is an extensive producer of iron. There were in 1899, 72 mines in operation, and 28 blast furnaces and foundries. The number of laborers employed in mining industries was 11,095. The total product of iron ore in 1899 was 5,995,412 tons, valued at 16,225,280 francs; cast iron, 982,929 tons, valued at 55,740,319 francs, and steel, 166,206 tons, valued at 18,719,511 francs. The total value of mineral products was 92,501,949 francs. For commercial purposes the duchy of Luxembourg belongs to the German Customs Union. There are in the duchy 276 miles of railway and 594 miles of telegraph lines. The revenue, according to the budget for 1900, was 12,275,570 francs, and the expenditures, 11,402,540 francs. The public debt amounts to 12,000,000 francs at 3½ per cent.

MAC ARTHUR, ARTHUR, major-general, U. S. V., succeeded General Elwell S. Otis as military governor of the Philippines in May, 1900. After active service General Otis was relieved of his command on account of ill-health, and sailed from Manila on May 5. General MacArthur is a native of Massachusetts. He served in the Civil War with the Twenty-fourth Wisconsin Infantry, rising to the rank of lieutenant-colonel in May, 1865. On March 13 of that year he was brevetted lieutenant-colonel of volunteers for gallant and meritorious services in the battles of Perryville, Ky., and Stone River, Missionary Ridge, and Dandridge, Tenn.; and on the same day he received the brevet of colonel of volunteers for gallant and meritorious services in the battle of Franklin, Tenn., and in the Atlanta campaign. For gallantry at Missionary Ridge MacArthur was also awarded a congressional medal of honor. In February, 1866, he entered the regular army as second lieutenant in the Seventeenth Infantry. He was promoted through the regular grades, becoming major (Thirteenth Infantry) in July, 1889, and lieutenant-colonel in May, 1896. In May, 1898, he was appointed brigadier-general of volunteers, being advanced to major-general in the following August; he was placed in command of the second division of the Eighth Corps on special duty in Havana, Cuba. Subsequently he was transferred to the Philippines; he has served against the Filipinos from the beginning of the insurrection in February, 1899.

McCALLA, BOWMAN H., captain in the United States Navy, was prominent in the Chinese operations (see CHINESE EMPIRE) of June, 1900. Commanding the one hundred men landed by Rear-Admiral Kempff on reaching Taku, he proceeded with the international column, under command of Admiral Seymour of the British Navy, on the expedition to reopen the railway lines between Peking and the coast and to protect the foreigners in the capital. In this hazardous and unsuccessful march the bravery and zeal of Captain McCalla, who was severely wounded, was especially commended by Admiral Seymour.

Captain McCalla was born at Camden, N. J., in 1844, and graduated from the Naval Academy in 1864. He was attached to the *Susquehanna*, Brazil Squadron, 1865-66, and was promoted master at the end of the latter year. He later served on various stations, being promoted commander in 1884 and captain in 1898. The same year he was captain of the navy yard at Norfolk, Va. During the war with Spain, Captain McCalla won distinction as commander of the *Marblehead*, and during 1899 he did some excellent service in the Philippines. His official career has not been free from trouble. Charged with cruelty to his seamen, he was court-martialed, 1890, and being convicted, was suspended for three years. His sentence was shortened, and in March, 1900, he was pardoned by President McKinley. Toward the end of the year it was reported that Captain McCalla was again undergoing court-martial at Manila on the charge of poor management and lack of discipline on board his ship, the *Newark*.

MACDONALD, ANGUS, D.D., Roman Catholic archbishop of St. Andrews and Edinburgh, died April 30, 1900. He was born in Inverness-shire, September 18,

1844, was educated at St. Cuthbert's College, Ushaw, and received his bachelor's degree at London University. He was ordained to the priesthood in July, 1872, and when the Roman Catholic hierarchy was restored in Scotland in 1878 he was appointed bishop of Argyll and the Isles. Probably an important factor in this appointment was his fluency in the Gaelic speech. On July 7, 1892, he was translated to the archiepiscopal see of St. Andrews and Edinburgh.

MAC DONALD, SIR CLAUDE MAXWELL, was appointed British minister to Japan in the autumn of 1900, having been transferred from China. He had been present at Peking during the attack on the legations in the summer of 1900. He was born in 1852, and after being educated at Uppingham and at Sandhurst, entered the army in 1872. He served in the Egyptian campaign of 1882, and was appointed in the following year military attaché to the British agency at Cairo. In 1884, joining the Forty-second Highlanders (the Black Watch), he took part in the operations in eastern Soudan, and was wounded at the battle of Tamai. He received a special medal for gallantry. After a year of governmental service in Zanzibar he was in 1888 appointed a commissioner to the Niger Territories, where he showed great ability in developing the resources of this region. In 1891 he became commissioner and consul-general in the Oil Rivers Protectorate. He created a regular administration, established a custom house, and in 1895 left the territory vastly improved by the civilizing influences of British rule. His mission to Berlin to assist in the delimitation of the boundary between the Oil Rivers Protectorate and the Cameroons proved his diplomatic ability. In 1896, at the beginning of that period of diplomatic tension which followed China's unsuccessful war with Japan, Sir Claude MacDonald was appointed envoy extraordinary and minister plenipotentiary at Peking.

As minister he obtained for his country some valuable concessions. It was largely through his efforts that the Chinese government permitted the inspector-general of maritime customs to be a British subject so long as Great Britain's trade was larger than that of any other foreign Power. He also persuaded the government to open the inland waters to navigation. He was made a K.C.M.G. in 1892.

McCLERNAND, Major-General JOHN ALEXANDER, veteran of the Civil War, died September 20, 1900. Born in Kentucky in 1812, he moved to Illinois, where he practised law and became a member of the Legislature in 1836. From 1843 to 1851 he was a Democratic representative in Congress, and again from 1859 until the breaking out of the war. With John A. Logan and Philip B. Fouke he raised the McClernand brigade, which he commanded at Belmont, having been appointed brigadier-general of volunteers. He was at Fort Donelson and Shiloh, and in 1863 relieved General Sherman in command of the expedition for the capture of Vicksburg. He was in command of the Thirteenth Corps until July, 1863. In 1864 he resigned from the army, and resumed the practice of law at Springfield.

McCORMICK, LEANDER J., manufacturer and inventor, died February 20, 1900. He was born in Rockbridge County, Va., February 8, 1819, and became associated in the manufacture of reapers with his brother, Cyrus Hall McCormick, and his father, Robert McCormick, the inventor of the reaper. After engaging in manufacturing in Cincinnati for a year he removed to Chicago in 1848, and in 1849 established with his brother a reaper manufactory. In 1879 this business was incorporated as the McCormick Harvesting Machine Company. Ten years later he retired from active business. He invented numerous valuable improvements for reapers. In 1871 he gave to the University of Virginia a 24-inch refracting telescope and the observatory that bears his name.

MACEDONIAN COMMITTEE. See BULGARIA.

McGIFFERT, Professor ARTHUR C., D.D. See PRESBYTERIAN CHURCH.

McGLYNN, EDWARD, D.D., one of the most prominent Roman Catholic priests supporting the principle of political independence in the Church, died at his home in Newburg, N. Y., January 7, 1900. Born in New York, September 27, 1837, he was educated at the Free Academy, now the College of the City of New York, and the College of the Propaganda and the American College in Rome. Here he was ordained to the priesthood in 1860, and soon after returned to New York, where he engaged in active church work. In 1866 he was appointed pastor of St. Stephen's Church, a charge he retained for twenty-one years. Soon he became well known through his progressive ideas, his eloquence, and his untiring efforts in behalf of the poor and afflicted. His reputation was increased by his position on the question of parochial schools. In this he came into conflict with his ecclesiastical superiors, since he opposed the burdening of his parishioners with the expenses of denominational institutions, and favored sending Catholic children to the public schools. The strained relations between himself and his superiors were increased by his open friendship with many Protestant clergymen, but positive and formal charges were not brought against him until he avowed his adherence to the single-tax theories of

Henry George. Dr. McGlynn's public support of George in the mayoralty contest of 1886, despite Archbishop Corrigan's request to the contrary, resulted in the temporary suspension of the priest, but not in the relinquishment of his radical views, although Cardinal Simeoni declared the single-tax doctrines at variance with the teachings of the Church. Charges, accordingly, were made against Dr. McGlynn, and he was summoned to appear before the Propaganda in Rome. Ignoring the summons, he assisted in founding the Anti-Poverty Society, and made a tour of the West, proclaiming the doctrine, "No politics from Rome." As a result he was excommunicated in July, 1887. He continued, however, in popular favor, and delivered many lectures at Cooper Union, New York. When Monsignor Satolli came to America as apostolic delegate in 1892, Dr. McGlynn's case was reopened, and in December he was restored to the church and the priesthood; but instead of re-appointing him to his old church, the archbishop sent him to a parish in Newburg. He remained the friend of Henry George until the latter's death, and held to his conviction that the Vatican is not to dictate the politics of an American citizen. Dr. McGlynn was greatly beloved by his parishioners, and had the affectionate esteem of many people who did not agree with his single-tax theories. He gave away his income to the poor, and is said to have died in debt.

MCGUIRE, HUNTER HOLMES, M.D., LL.D., chief surgeon of the Stonewall Brigade of the Confederate army, and a well-known physician and surgeon, died in Richmond, Va., September 19, 1900. He was born at Winchester, Va., October 11, 1835, and after receiving a medical education at the University of Virginia became instructor in surgery in Jefferson Medical College, Philadelphia. At the time of the John Brown raid he organized a movement resulting in all the Southern medical students in Philadelphia leaving that city for the Medical College of Virginia, and advanced the necessary money for this undertaking from his own resources, being subsequently, however, reimbursed by the city of Richmond. After the war, in which Dr. McGuire served as surgeon, he was appointed professor of surgery in the Medical College of Virginia, where he lectured until 1878. In 1883 he established St. Luke's Hospital in Richmond, and was its consulting surgeon, as well as a member of the board of the Virginia Hospital, which he founded in 1894. Dr. McGuire was president of the University College of Medicine, Richmond, and at various times was president of the American Medical Association, the American Surgeons' Association, the Southern Surgical and Gynecological Association, and other medical organizations. It is told of Dr. McGuire that in the Civil War he originated the practice of releasing all captured medical officers.

McKINLEY, WILLIAM, elected President of the United States in 1896 and again in 1900, was born at Niles, O., January 29, 1843. His father, also William McKinley, and of Scotch-Irish descent, was an iron maker of ability and character, widely known and respected. His mother, who was of English and Scotch-German descent, lived to see, in her eighty-eighth year, her son take the inaugural oath. William's education was begun in the public schools of Niles; but when he was 9 years old the family moved to Poland, Mahoning County, where his education was continued in Union Seminary. In June, 1861, he enlisted as a private in the Twenty-third Ohio Volunteer Infantry, and served during the entire war, being breveted major for "gallant and meritorious service." Upon leaving the army he studied law, was admitted to the Ohio bar in 1867, and settled in Canton, which he has since made his home. In 1871 he married Miss Ida Saxton, and two daughters were born to them, both of whom died in early childhood. In 1869 McKinley began his political career as prosecuting attorney of Stark County, a Democratic county which failed to re-elect him in 1871. In 1876 he was elected to Congress, and served in that body until 1891, when he was defeated for re-election, owing to the fact that the Democrats had gerrymandered the State. In Congress McKinley was known as an uncompromising advocate of a high protective tariff. In 1880 McKinley was appointed a member of the ways and means committee; and as chairman of that committee in 1890 he introduced and succeeded in having passed the so-called McKinley Tariff bill, a high protective measure, representing the fruits of Republican victory in 1888, and resulting in the overthrow of the party in 1892. In 1891 McKinley was elected governor of Ohio by 21,500 plurality, and in 1893 he was re-elected by 80,995 plurality. In the Republican National Convention of 1888, when McKinley was pledged to support James G. Blaine, and more especially in the convention of 1892, when he supported Benjamin Harrison, there was a strong movement to nominate McKinley, but this, it may be said to his enduring credit, he would not allow. In June, 1896, however (see HANNA, MARCUS A.), he was nominated for President on the first ballot, the convention vote being as follows: McKinley, 661½; Reed, 84½; Quay, 61½; Morton, 58; Allison, 35½. After the Democratic convention, which met in July, had demanded the free and unlimited coinage of silver, and nominated for the Presidency W. J. Bryan (*q.v.*), an uncompromising silver radical, searching inquiries were made as to Mr. McKinley's position on the subject. From this it appeared

that the tariff, and not the currency, was the subject to which Mr. McKinley had given special attention and upon which he held firm convictions. In 1890, mainly with a view, it was said, to party regularity, he voted in favor of the Sherman Silver bill, which directed the secretary of the treasury to purchase 4,500,000 ounces of silver monthly and to issue treasury certificates therefor. The hard times and financial stringency which followed were by bankers and business men largely ascribed to this silver law, and they echoed Cleveland's sentiment when he said in his message in August, 1893, to the Congress especially convened to repeal the law: "I believe these things are principally chargeable to congressional legislation touching the purchase and coinage of silver by the general government." The repeal of the law met with the general approval of financial interests, yet in September, 1894, Mr. McKinley, in criticising the administration, said: "The Democratic government has . . . given us no silver legislation whatever, except to strike down the Sherman law at its special session, called for that purpose in response to the earnest recommendation of a Democratic President. The party that struck silver down and gave it the severest blow it ever had cannot be relied upon to give that metal honorable treatment." On account of this and similar statements severe criticisms were passed upon the Republican convention in nominating Mr. McKinley upon a platform which unequivocally demanded a gold currency, for it was thought that upon the paramount issue of the campaign the candidate chosen should be the leader, not the follower, of his party. During the campaign, however, Mr. McKinley declared plainly in favor of sound money, and this fact, taken in conjunction with the antipathy of the Cleveland Democrats for Mr. Bryan, resulted in his receiving 271 electoral votes, as against 176 cast for Mr. Bryan. Immediately after his inauguration the President convened a special session of Congress, which passed the Dingley Tariff bill, a measure designed to meet the deficit in the treasury and to protect home industries. In his annual message to Congress on December 6, 1897, the President urged the necessity of banking and currency laws in order to prevent such a depletion of the gold reserve as had occurred in 1893. Mainly, however, the message dealt with the Cuban troubles. The President stated that the new Liberal ministry under Sagasta, in response to representations made by the United States, had recalled Weyler, revoked the order of concentration, promised to institute immediately an autonomous government in Cuba, and had given assurances that the war would be conducted henceforth upon "humane" principles. In view of these facts, the President considered that the United States should not interfere until the new ministry had had an opportunity to make good its intentions. In January, however, it became evident that the Cubans had suffered too long and deeply and had become too thoroughly distrustful of Spanish kindness to allow to the new measures any chance of success. As conditions grew steadily worse, the second-class battle-ship *Maine* was sent to Havana to guard American interests. On February 15, 1898, this vessel was blown to pieces by what was afterward shown to be a submarine mine. Yet as no direct proof was adduced to show that the Spanish authorities were culpable, the President continued his endeavors to find a peaceful solution for the Cuban troubles. On March 23 Spain was informed that if some method of securing peace in Cuba was not speedily obtained, the President would submit the whole matter to Congress. Spain replied on the 31st that if the Cubans desired it an armistice would be declared, but that the future relations of Spain and Cuba could not immediately be decided upon. On April 11 the President stated in a message to Congress that the United States should now interfere to stop the war. He cautioned Congress, however, against recognizing the Cubans as belligerents, since this would force the United States to grant neutrality rights to both parties, and he also advised Congress not to recognize the "so-called Cuban republic," for then, in accordance with the law of nations, the United States would be obliged to treat the Cubans as equal allies and Cuba as a sovereign nation. Upon receiving the President's message Congress directed that the military and naval forces of the United States should be used to secure Cuban independence, and the war followed. During the war various scandals, great and small, arose in connection with the administration of the war office, and these resulted finally, though not directly, in the retirement of R. A. Alger as secretary of war and in the appointment in his stead of Elihu Root, of New York. When, after the fall of Santiago, it became evident that further resistance by Spain was useless, the French ambassador was requested on July 26, 1898, to inquire upon what terms the United States would consider peace negotiations. The President answered that Spain must evacuate Cuba, cede Porto Rico, and permit the United States to occupy Manila until the disposition and ownership of the Philippines were determined by treaty. A protocol to this effect having been signed on August 12, 1898, the President on August 26 appointed five commissioners to draw up a definite treaty in conjunction with the commissioners appointed for that purpose by Spain. The one unsettled question of great importance which came before the commission, and one upon which the American commissioners were divided in opinion, was the

disposition of the Philippines. It is now known from official records made public two years after the treaty was drawn that the President eventually assumed entire responsibility for the settlement of this question and directed the commissioners to demand from Spain the cession of the islands. By this act alone his first administration is stamped as the most important since that of Lincoln. For while the constitutional right of this country to acquire territory *as such* had practically been affirmed by the Louisiana purchase of 1803 and since that time, there was no precedent for the acquisition of a thickly peopled country, which could only be held as a colony and ruled *ex-cathedra* by a system of laws devised for that especial purpose, and administered by appointees of the central government. If in the cases pending (see UNITED STATES, paragraph Judiciary) before the Supreme Court at the end of 1900 it is held that the power to acquire territory carries with it as a corollary the power to govern as subjects the inhabitants of such territory, then the scope of the constitution as previously known will by the President's initial action be in one particular immeasurably enlarged.

The treaty with Spain, as drawn up by the commissioners pursuant to the President's directions, was ratified by the Senate on February 6, 1899. About the same time the Filipinos under Aguinaldo began a revolt against the United States. It was said at the time that this revolt would not amount to anything, and would be quelled within six months; a large number of troops were hastily sent to the islands, however, and down to the end of the year 1900 the insurrection was still in progress. The reasons for the revolt are as yet obscure, but it was frequently declared that one of the determining causes was the fact that while during the war with Spain and immediately subsequent to it the military commanders in the Philippines permitted the Filipinos to believe that they would be dealt with as allies and that their government would be recognized, this policy was later changed, and the natives were given to understand that they were a subject people (see PRESIDENTIAL CAMPAIGN, paragraph Imperialism). In his annual message of December 5, 1898, the President advised that the regular standing army be increased at his discretion to 100,000 men. The President also made mention of the annexation of Hawaii, which had been accomplished on August 12, 1898, in accordance with an act of Congress approved on July 7, 1898. In May, 1899, an important executive order was made removing some 3000 federal offices from the competitive list, as provided for by the Civil Service act of Congress of 1883, and shifting others from the classified to the unclassified service. The Civil Service Reform League (*q.v.*), in commenting upon this order, pointed out that it marked the first great reduction made in the actual extent of the merit system since the act of 1883 was passed. On the other hand, it was stated that only such offices had been taken from the competitive list as experience showed was desirable. "The principal purpose of the order," said President McKinley, "was to exempt from competitive examination certain places involving judiciary responsibilities or duties of a strictly confidential nature or executive character, which it was thought might better be filled either by non-competitive examination or in the discretion of the appointing officer." In his annual message of December, 1899 (see article UNITED STATES, paragraph Congress) the President strongly recommended that Congress enact a subsidy bill to develop the mercantile marine of the country engaged in foreign trade. "The expense," he said, "is as nothing compared to the advantage to be achieved." "The re-establishment of our merchant marine involves in a large measure our continued industrial progress and the extension of our commercial triumphs." Both in this recommendation and in others disposition was shown by the administration to neglect immediate considerations of economy for the larger advantages which it was thought would accrue to the country if aid were extended for some national purpose or to a large class of people. Thus, notwithstanding the large pensions (*q.v.*) already paid by the government, the President advised and Congress enacted a law considerably increasing them. A more notable instance was the manner in which the Spanish war bonds, \$200,000,000 in amount, were sold. These, if disposed of through regular banking channels, would have brought, at least, \$107 for every \$100 par value, thus netting the government \$214,000,000. But as they were sold at par in small amounts all over the country as a popular investment, and in order to incite patriotism, the government only received \$200,000,000 minus the cost, estimated in the millions, of the clerical work which this method necessitated. The President's advocacy of the construction of a canal between the Atlantic and Pacific oceans (see NICARAGUA CANAL) and its control by this country when completed, and the interest manifested by him in the permanent strengthening of the military and naval forces of the United States, illustrate in a still more striking manner the opinion of the Executive that money should not be grudged where benefit to widespread interests or the prosecution of the national policy is involved.

Toward the close of the President's first administration it became evident that he had gained to a remarkable degree the reliance of Congress. A hostile Congress or

even an aggressively hostile minority in Congress would have had rich opportunity during the administration to cause embarrassment to the Executive by holding up appointments and by demanding information which the President deemed it "incompatible with the public interest" to disclose. But in both these respects Congress showed itself unwontedly complacent. During his long term of office in Congress, the President had thoroughly learned the characteristics of that body and the personality of many of its leaders. And, therefore, and perhaps taking advice from the disagreements of his predecessor with Congress, he made a point of keeping in close touch with the heads of congressional committees and of consulting them upon matters of importance. Mr. Cleveland in his second administration vetoed over 400 bills. Early in 1900 President McKinley had vetoed only 4. At the elections held in November, 1900 (see article **PRESIDENTIAL CAMPAIGN** for a discussion of the issues and an analysis of the returns), the President received 292 electoral votes, against 155 cast for his opponent; in 1896 the President had received 271 electoral votes, while Mr. Bryan received 176.

MacLAGAN, Sir DOUGLAS, M.D., F.R.S.E., a prominent Scotch physician, died April 5, 1900. He was born at Ayr, April 17, 1812, and was educated at the University of Edinburgh, where he received his degree of Doctor of Medicine in 1833. After this he studied in Berlin, London, and Paris, and became a prominent member of the Scotch medical societies, being president of the Royal College of Physicians, Edinburgh, 1884, and of the Royal College of Surgeons, Edinburgh, 1859-60. He was professor of medical jurisprudence and public health in Edinburgh University from 1862 to 1896, when he retired. He was knighted in 1886.

McLEAY, FRANKLIN, a prominent Canadian actor, died of brain fever in London, England, July 5, 1900. Born of Scotch parentage at Watford, Ontario, he was educated at Woodstock College and Toronto University, and before graduation at the latter institution accepted the chair of modern languages in the Woodstock College Institute. Through the influence of James E. Murdock he attended the Boston School of Oratory, subsequently joining Wilson Barrett's company and becoming a Shakespearean scholar of considerable authority. His acting not only was popular, but was subtle and intelligent. He appeared in over forty rôles, of which may be mentioned: The Deemster in *Ben-ma-chree*; the Tetrarch in *Claudius*; Father Christmas in *Silver King*; Richelieu in *The Three Musketeers*; Nero, in *The Sign of the Cross*; Peter Quince in *A Midsummer Night's Dream*; Cassius in *Julius Cæsar*; Hubert in *King John*; Iago in *Othello*.

McMURTRIE, WILLIAM, Ph.D., chemist and president of the American Chemical Society, was born at Belvidere, N. J., March 10, 1851, and was educated at Lafayette College, from which he received the degrees of Engineer of Mines, Master of Science, and Doctor of Philosophy. He was for a number of years a member of the scientific staff of the United States Department of Agriculture, serving as assistant chemist, chief chemist, and special agent in agricultural technology. In 1878 he represented this department at the Paris Exposition, and in 1883 received the honor of being appointed "Chevalier du Mérite Agricole." Dr. McMurtrie was professor of chemistry at the University of Illinois from 1882 to 1888, and chemist to the Illinois Agricultural Experiment Station. He served as chairman of the Committee of Awards on Wool at the World's Columbian Exposition, and in 1895 he was vice-president of the section of chemistry of the American Association for the Advancement of Science, and has been chairman of the New York section of the American Chemical Society. He is the author of many valuable works, including *The Culture of the Beet and Manufacture of Sugar Therefrom*; *The Culture of Sumac*; *Grape Culture in the United States*; *Investigation of Wools and Other Animal Industries*, and numerous other scientific papers.

McNAIR, FREDERICK VALLETTE, rear-admiral in the United States Navy, died November 28, 1900. He commanded the Asiatic squadron from 1895 until 1898. Though Admiral McNair's name is not directly connected with any of the great achievements of the Spanish-American War, the proficiency of the gunners and the excellent condition of the vessels when he handed over the command to Commodore Dewey were important factors in the victories of Manila Bay. Admiral McNair was born in Pennsylvania in 1837, graduated from Annapolis in 1857, and, rising in command, was appointed commodore in 1895 and rear-admiral three years later. Previous to the Civil War he served in Chinese waters and in the Mediterranean squadron. He was in active service throughout the war, and served under Farragut on the Mississippi, taking part in the engagement of the Chalmeth batteries and the capture of New Orleans, as well as in the engagements resulting in the surrender of Fort Fisher. In 1868 McNair was instructor at the United States Naval Academy. In 1872, being commissioned commander, he was placed in command of the *Kearsarge*, and later of the *Portsmouth*. Subsequently he was captain of the navy yard at Mare Island, Cal., and superintendent of the Naval Observatory.

MADAGASCAR, a French colony, is an island separated from Africa by the Mozambique Channel, the least distance to the mainland being 230 miles.

Area and Population.—Madagascar is the fourth largest island in the world, having a length of 975 miles, a breadth of 358 miles, and an estimated area, with its adjacent islands, of 228,500 square miles. No census has ever been taken, but what seems to be the most trustworthy estimate places the number of inhabitants at 3,500,000, of whom the most important element is the Hova tribe, an intelligent race numbering about 1,000,000 and allied to the Malays. Other tribes with their estimated numbers are: Sakalavas, 1,000,000; Betsiléos, 600,000; Betsimisàraka, 400,000; Bàra, 200,000. The foreign inhabitants, who are largely engaged in trade, are for the most part in the coast towns, and consist of Hindus, Chinese, Arabs, and Mauritian creoles, while many negroes have been brought from Africa as slaves. The capital and largest city is Antananarivo, with a population variously estimated at from 70,000 to 100,000, and the chief port is Tamatave, on the east coast, with from 5000 to 10,000 inhabitants. Madagascar has few other large towns; the prominent port, Majungà, however, on the northwest coast, has a population estimated at from 6000 to 14,000.

Christian missions have made considerable progress in the island, by 1895 a large part of the Hova and other tribes being regarded as Christianized. The Protestants, estimated at 450,000 in number, are connected with churches established by the London Missionary Society and with various Anglican, American, and Norwegian Lutheran, and Friends' missions, while about 50,000 persons were connected with the Roman Catholic missions. Under the supervision of the various missions there were hospitals and allied institutions, colleges, and about 1800 schools, with some 170,000 pupils in attendance. Upon the establishment of French authority strong political influence was brought to bear against the Protestants, and although proclamations guaranteeing religious liberty were issued, many natives have been constrained and, it is alleged, were terrorized into accepting Catholicism, and much Protestant church property turned over to the Catholic authorities. Some of the churches have been restored, but there is no doubt that the French influence is decidedly against the Protestant missions.

Government and Finance.—Although the French claim to Madagascar dates as far back as 1642, the government of the island up to 1895 was an absolute monarchy, at that time under Queen Rànavàlona III. Since 1885 a French resident-general had been stationed at the capital, and the foreign relations of the country were nominally under the control of France, which government in 1890 extended its protection over the island. This the native government refused to recognize, but in 1895 a French expedition compelled the submission of the queen, the colonial government being formed the following year with General Joseph S. Gallieni as governor-general and commander-in-chief, a position he still holds. Queen Rànavàlona was finally deposed in February, 1897, and with her family exiled to Reunion Island, whence she was deported to Algiers in March, 1899. Slavery was nominally abolished in 1877 and again, by the French, in 1896. However, the *corvée*, a system of enforced labor directed by the government, was maintained. In this way government expenditures for various public works have been kept down, but the oppression of the people has been regarded as severe, while they have also borne the imposition of many taxes. In 1900 there were reports of cruel measures practised by General Gallieni, which were discussed in the French chamber, and toward the end of the year it was announced that the *corvée* would be abolished on the first of January, 1901. The troops maintained by France in Madagascar in 1900 were reported to number 375 commissioned officers and 10,920 men—a force that still seems necessary to uphold the French authority; of the non-commissioned officers, 285 were natives and of the privates, 7215. The French budget for 1900 assigned 22,375,482 francs (\$4,318,468) for military expenditures in the island. The total cost of the French occupation was estimated to be nearly \$34,000,000. The chief source of revenue is direct and indirect taxation, and the principal expenditures are for military and civil administration and public works. In 1897 the revenue amounted to 9,093,820 francs, and the expenditure, 7,495,131 francs; in 1899 the revenue was about 9,336,000 francs, but the expenditure reached 11,136,000 francs, the deficiency of 1,800,000 francs being met by the French government. For the year 1900 the total cost of the colony to France was 25,181,048 francs (\$4,859,942).

Production and Commerce.—Cattle-raising and agriculture are the principal industries, the products of the latter including rice, coffee, sugar, cotton, sweet potatoes, and vanilla; cacao is also produced, and rubber, which commercially is the most important product of the island. Many minerals—including gold, iron, galena, copper, sulphur, lignite, and graphite—have been found and several hundred mining claims staked out, but hitherto little actual mining has been done. The few manufacturing industries of the island are carried on by primitive methods, and include metal work and the weaving of silk, cotton, and the raphia palm fibre. The leading

imports are textiles, wine and other beverages, flour, and tobacco; the chief exports are rubber, cattle, hides, raphia, and wax. The reported values of Madagascar's imports and exports, in francs worth 19.3 cents each, are as follows:

	1896.	1897.	1898.	1899.
Imports.....	13,897,931	18,358,918	21,641,000	27,916,617
Exports.....	3,605,952	4,342,432	4,960,000	8,045,440

Practically French trade produced the increase in the imports of 1899 over those of 1898. British trade has greatly declined owing to the imposition of preferential tariffs favoring French commerce; in the case of cotton tissues—one of the principal imports—tariff discriminations have virtually closed the market to all but French goods. The percentage of the exports taken by France—about 62 per cent. of the total in 1899—is also increasing. The rubber export in 1899 was valued at 2,213,150 francs. The export of gold to France, which in 1896 amounted to less than 87,000 francs, in 1899 reached 1,064,200 francs. In 1898 the entrances and clearances at the ports of the island were 6061 vessels, aggregating 879,000 tons, of which 734,000 tons were French, 78,000 British, and 39,000 German.

Communications.—The French have expended, or rather have caused the natives to expend, a considerable amount of effort on the building of roads, but few good highways yet exist, and transportation is effected largely by carriers and canoes. Tamatave and Antananarivo, and some of the military posts are being connected by wagon roads, and it has been proposed to connect the lagoons on the east coast by canals. There is telegraphic communication between Tamatave and the capital, and a railway, 180 miles in length, has been projected between the two cities. There are a few other telegraph lines, one of which connects Antananarivo with the port Majunga, which has cable communication with the Eastern Telegraph Company in Mozambique.

MAGNALIUM. See ALUMINUM.

MAGNESITE. The production of magnesite in the United States in 1900 is stated at 2768 short tons, valued at \$10,518, as compared with 2000 tons, with a value of \$7600, produced in 1899. The production in both cases came from California.

MAGNETIC SURVEY OF THE UNITED STATES. In 1899 Dr. H. S. Pritchett, then superintendent of the United States Coast and Geodetic Survey, and at present president of the Massachusetts Institute of Technology, created a division of terrestrial magnetism, under the supervision of Dr. L. A. Bauer. This division is engaged in extending the magnetic work previously done by the Survey, and in preparing for a thorough investigation of the magnetic conditions of the United States and the countries under its jurisdiction. Such a magnetic survey involves the determination of the declination, dip, and intensity at a number of places, and the study of the secular variation. The area to be investigated comprises 3,731,990 square miles, an area equal to that of Europe and about one-fifteenth that of the globe.

The work done since the formation of this division, up to the end of the year 1900, includes observations of magnetic intensity, declination and dip at about 500 stations. At most of these stations permanent marks have been placed, which indicate the true north with precision. The vessels of the Survey have also made extensive series of observations for the use of the mariner, much work of this kind having been done in Alaskan waters, where there are often places of pronounced local attraction. In some cases in this region a ship's compass will be affected from one-quarter of a point to four points. To study the subject of secular variation, stations, known as "repeat" stations, have been established in many localities, usually at or in the vicinity of a college or university to insure permanency, where observations will be made at regular intervals and the amount of secular change determined. The magnetic surveys of Maryland, North Carolina, West Virginia, and Iowa have been completed, the Geological Surveys of Maryland and North Carolina co-operating in the work in those States. At a number of magnetic base stations the variations of magnetism will be recorded photographically for purposes of comparison and discussion. On July 1, 1900, a temporary observatory was opened at Baldwin, Kan., while a permanent observatory has been erected at Cheltenham, Md., 16 miles southeast of Washington. Regular declination readings have been made at the International Latitude Observatory at Gaithersburg, Md., and at Sitka, Alaska. The sites for permanent magnetic base stations at Sitka and near Honolulu, Hawaiian Islands, have been selected, and buildings soon will be erected. Special simultaneous observations were made during the solar eclipse of May 28, 1900, and at other times in order to determine over how large an area the variations as recorded at the base stations would apply. The practical importance of this work consists in the obtaining of data useful in the location of land boundaries determined in earlier surveys, the establishment of true meridian lines for the use of local surveyors, and the supplying of magnetic data to the mariner.

MAINE, a New England State, has an area of 33,040 square miles. The capital is Augusta. Maine was admitted to the Union March 15, 1820.

Agriculture.—The following shows the production and value of the principal crops for 1900: Corn, 440,244 bushels, \$242,134; wheat, 40,755 bushels, \$36,680; oats, 5,257,612 bushels, \$1,997,893; barley, 315,319 bushels, \$195,498; rye, 17,080 bushels, \$14,006; buckwheat, 719,760 bushels, \$352,682; potatoes, 6,200,208 bushels, \$3,038,102; and hay, 843,997 tons, \$10,929,761. The *Bulletin* of the National Association of Wool Manufacturers estimates the wool product of 1900 as follows: Number of sheep, 247,168; wool, washed and unwashed, 1,483,008 pounds; scoured wool, 889,805 pounds.

Manufactures and Fisheries.—During the calendar year 1900 the following new establishments were constructed: Eight creameries and cheese factories; 41 lumber, planing, shingle, and stove mills; 4 starch factories; 2 machine shops; 14 canning factories, and 26 miscellaneous mills, factories, and shops—in all 95 new establishments. Ten cotton factories reported for the fiscal year ending June 30, 1900, as follows: Aggregate capital, \$15,697,710; cost of material used, \$6,397,630; total wages paid, \$4,142,896; value of product, \$11,854,655. Twenty-eight woollen mills reported: Capital, \$4,111,080; cost of material, \$4,010,345; wages paid, \$1,569,534; value of product, \$7,167,715; 31 woodworking plants (for the manufacture of house finish) reported: Capital, \$743,900; cost of material, \$706,500; wages paid, \$447,382; value of product, \$1,482,500. The canning industry includes the packing of sweet corn, sardines, clams, blueberries, beans, squash, apples, and tomatoes. This industry has become more valuable than the slate, granite, and ice industries of the State combined, the value of the entire canned product being about \$5,000,000 annually. Maine is the only State engaged in the sardine packing industry, and ranks third as a packer of sweet corn. The following table gives interesting figures in regard to the four chief canning industries in 1899:

CANNING INDUSTRY.	FACTORIES.		Number of employees.	Wages paid.	Cases packed.*	Value of product.
	Num-ber.	Value.				
Blueberries.....	5	\$35,000	100	.....	52,000	\$104,000
Clams.....	14	13,900	1,367	.....	59,169	179,413
Corn.....	68	550,000	7,500	\$349,000	920,833	1,519,374
Sardines.....	69	561,000	6,076	953,006	1,170,568	3,253,076
Totals.....	156	\$1,159,900	15,043	.....	2,302,570	\$5,055,863

* Each case contained 24 cans.

Ship-building is an important industry in Maine; the total tonnage launched during the 11 months ending November 30, 1900, was 53,067 tons, as compared with 47,088 tons for the entire calendar year 1899.

About 20,000 persons were employed in the sea and shore fisheries in 1900, and nearly \$3,000,000 were invested in this industry. The total value of the various products approximated \$6,000,000. In 1900 there were 49 creameries and 14 cheese factories in operation, which together utilized the product of 30,000 cows. In 1899 Maine ranked second among the States as a producer of granite. During that year quarrying yielded granite to the value of \$1,321,082; slate, \$181,766; limestone, \$1,028,375. The product of 85 cigar factories was 5,872,517 cigars.

Commerce.—During the fiscal year ending June 30, 1900, the imports of merchandise at the various ports aggregated in value \$2,928,010, an increase in a year of \$853,678; and the exports, \$15,263,129, an increase of \$1,484,824. Imports of gold and silver at Bangor were \$159,214; exports, \$83; imports of gold at Passamaquoddy, \$89,915, making the total foreign trade of the year \$18,436,351.

Railways.—The new railway construction reported for the calendar year 1900 was 3.15 miles, giving the State a total mileage of 1923.52. The street railway mileage was 240.20 in 1899, and on June 30, 1900, was 268.99, an increase of 28.79 miles. The gross earnings of the steam railroads for the year ending June 30, 1900, were \$10,008,502, an increase in a year of \$1,285,284. The number of passengers carried was 5,417,759, a gain in a year of 508,788. The total freight tonnage was 7,681,808, as against 6,539,200 tons in 1899, an increase of 1,142,608 tons.

Banks.—On October 31, 1900, there were 83 national banks in operation, and 17 in liquidation, and the active capital aggregated \$10,858,500; circulation, \$6,516,725; deposits, \$23,061,141; and reserve held, \$7,773,288. The loan and trust companies, June 30, 1900, numbered 17, and had capital, \$1,601,700; deposits, \$9,058,640; and resources, \$12,152,207; and the mutual savings banks, 51, with 183,103 depositors; deposits, \$66,132,677, and resources, \$69,718,075. The exchanges at the Portland

clearing house for the year ending September 30, 1900, aggregated \$56,966,243. a decrease within a year of \$21,058,476.

Education.—In 1899 the school population was 210,192; enrolment in the public schools, 131,588, and average daily attendance, 97,706. Compared with 1898 this is a decrease in the enrolment, but an increase in the average daily attendance. There were in 1899, 6447 teachers, 3966 buildings used as school-houses, and public school property valued at \$4,222,395—all these figures being slightly less than in the preceding year. The revenue was \$1,507,345, and the expenditures, \$1,513,125, of which \$1,118,954 was for teachers' and superintendents' salaries. There were 157 public high schools, with 345 teachers and 8843 students; 37 private secondary schools, with 144 teachers and 2581 students; 5 public schools, with 31 teachers and 700 students, and 2 private normal schools, with 6 teachers and 40 students. Four colleges and universities for men and for both sexes reported 88 professors and instructors, 1002 students, and a total income of \$217,320; and 2 colleges and seminaries for women reported 23 professors and instructors, 257 students, and a total income of \$18,700. The professional schools comprised 2 theological schools, with 13 instructors and 63 students; 1 law school, with 9 instructors and 30 students, and 2 medical schools, with 32 instructors and 167 students.

Finances.—Receipts of the State treasury for the two years ending December 31, 1900, including balances, were \$3,953,647; disbursements, \$3,754,768; balance on hand, December 31, 1900, \$198,879. The principal sources of State revenue during 1899 and 1900 were as follows: Cities, towns, etc., \$1,815,902; savings banks, \$851,566; railroads, \$323,052; insurance companies, \$131,405; new corporations, \$71,565. The total revenue for the State during the two years was \$1,783,021. The bonded debt of the State at the close of 1900 was \$2,103,000, a reduction of \$516,300 since 1890. Outstanding temporary loans against the State aggregated \$350,000.

Penal Institutions and State Charities.—On November 30, 1900, the number of patients at the Maine Insane Hospital was 771, an increase of 38 in two years. There were 172 convicts in the State prison, 37 less than in 1899. Fifty-eight convicts were committed to the prison during the year, 91 were discharged upon expiration of sentence, 3 died, and 1 was pardoned. The reform school for boys contained about 150 inmates, and the number of girls in the Maine Industrial School for Girls was 165.

Population.—According to the United States census, the population in 1890 was 661,086; in 1900, 694,466; increase for the decade, 33,380. The largest city is Portland, whose population in 1900 was 50,145.

Elections.—In the State elections of 1900 the Republican candidate for governor, John F. Hill, defeated his Democratic opponent, Samuel L. Lord, by a plurality of 34,000. The four Republican representatives of Maine in the 56th Congress were returned to the 57th Congress by large majorities. In 1899 the State Legislature consisted, in the Senate, of 31 Republicans and in the House of 126 Republicans and 25 Democrats. In 1901, as a result of the 1900 elections, the Legislature will consist, in the Senate, of 30 Republicans and 1 Democrat, and in the House of 132 Republicans and 19 Democrats. In the national election McKinley received 65,435 votes and Bryan, 36,822. In 1896 McKinley received 80,465 votes, and Bryan, 34,688. McKinley's plurality was thus reduced from 45,777 to 28,613.

State Officers and National Representatives.—State officers for 1900: Executive—governor, Llewellyn Powers; secretary of state, Byron Boyd; treasurer, F. M. Simpson; adjutant-general, J. T. Richards; attorney-general, W. T. Haines; superintendent of education, W. W. Stetson; insurance commissioner, S. W. Carr—all Republicans.

Supreme Judicial Court: Chief justice, J. A. Peters; associate justices, A. P. Wiswell, L. A. Amery, W. H. Fogler, W. P. Whitehouse, Thomas H. Haskell, S. C. Strout and A. R. Savage—all Republicans except Strout; clerk, W. S. Choate (Rep.).

Congressional representatives for 1900 (56th Congress): A. L. Allen (Alfred). C. E. Littlefield (Rockland), E. C. Burleigh (Augusta), and C. A. Boutelle (Bangor)—all Republicans.

Senators for 1900 (56th Congress): W. P. Frye (until 1901) and Eugene Hale (until 1905)—both Republicans.

State officers for 1901: Executive—governor, J. F. Hill; secretary of state, Byron Boyd; treasurer, Oromandel Smith; adjutant-general, J. T. Richards; attorney-general, George M. Seidus; superintendent of education, W. W. Stetson; insurance commissioner, S. W. Carr—all Republicans.

Supreme Judicial Court: Chief justice, A. P. Wiswell; associate justices, L. A. Emery, W. H. Fogler, W. P. Whitehouse, S. C. Strout, A. R. Savage, F. A. Powers and H. C. Peabody—all Republicans except Strout; clerk, W. S. Choate.

Congressional representatives for 1901 (57th Congress): Same as for 1900. Senators for 1901 (57th Congress): Eugene Hale (until 1905), Ellsworth; other vacant.

MAJOR, CHARLES ("Edwin Caskoden"), an American author, published in 1898 as his first work the novel *When Knighthood Was in Flower*. The success of the book led to its dramatization in 1900. The author was born in 1856; resides at Shelbyville, Ind., and has hitherto been known as a prominent lawyer of the middle West.

MALARIA. Following closely upon the final demonstration by Ross in 1899 of the transmission of malaria by the mosquito, and the subsequent confirmatory investigations and corroboration by Manson, Low, Grassi, Celli, Bastianelli, and many others, comes a radical suggestion from Celli to limit malaria in Italy by compulsion. He and others are endeavoring to have laws passed by the chamber making punishable by statute the neglect of landed proprietors and employers of labor to provide every means of fighting the fever. The government is to be urged to provide quinine for the public at about cost. Celli advocates mechanical protection of houses by means of wire gauze, covering windows and surrounding porches. Drs. Sanbon and Low, under the authority of the British government, began in July, 1900, a series of experiments on the edge of a swamp near Ostia, in the Roman Campagna, to test the possibility of guarding against malarial infection. Many varieties of *anopheles* infest the neighboring houses of the peasants, who suffer constantly from malaria. See also ENTOMOLOGY (paragraph Insects and Disease).

MALTA, a British island colony, situated in the Mediterranean, comprises, besides the island of Malta, several islets and Gozo and Comino, and has an area of 117 square miles. The island of Malta, which has an area of 95 square miles, lies 58 miles south of Sicily and about 180 miles east of the coast of Tunis. The total estimated population of the colony at the beginning of 1900 was 181,648, besides the British military establishment, which later in the year numbered 10,663 men. The capital is Valetta, which is one of the most important ports of call and naval stations of Great Britain. The government is administered by a governor, who is assisted by an executive council of 7 official and 3 unofficial members, and a legislative council of 6 official and 13 elected members. The governor and commander of the troops since January, 1899, has been Lieutenant-General Sir Francis Wallace Grenfell. The language of the lower classes, who are chiefly Punic, is a dialect of Semitic origin; with the upper classes, who are of European, and particularly Italian, stock, the prevailing language is Italian. The language of the courts is both Italian and English. The population is largely Roman Catholic. Besides a university, a lyceum, and two secondary schools, there were in 1898, 124 public schools, with an attendance of 15,426, and 129 private schools, with an attendance of 3990. The government grant for public schools in that year was £21,846.

Import custom duties comprise about four-fifths of the revenue. The public debt is something over £79,000. Among the occupations of the people, lace-making, particularly in Gozo, is prominent; but the most important industry is agriculture, the leading products being potatoes, cotton, oranges, honey, figs, and corn. Statistics of finance and commerce are:

	Revenue.	Expenditure.	Imports.	Exports.
1898.....	£332,488	£339,082	£10,025,131	£9,379,140
1899.....	354,265	351,354	6,668,961	5,539,561

The foreign trade consists principally of goods in transit. Of the trade for 1898, the values of imports and exports actually imported or shipped out of the colony were £880,164 and £51,597. The value of actual imports in 1899 was £976,330. The large falling off in total imports in 1899 was due to the fact that many vessels made Malta a port of call. Vessels entered in 1898 numbered 3890, aggregating 3,563,728 tons; cleared, 3874, of 3,581,993 tons. There are 8 miles of railway, 65 miles of telegraph lines, and 360 miles of telephone lines.

Italian was the language of the courts up to March, 1899, but in that month the use of English was made allowable; and it was announced that after fifteen years court proceedings would be conducted entirely in the latter language. In the autumn of 1900 the Italian press protested with some bitterness against this introduction of English in the courts, and the attitude of the Italian-speaking Maltese seems to have caused some irritation among the English residents of Malta.

MAMMALOGY. See BIOLOGY and ZOOLOGICAL LITERATURE (paragraphs Systematic Works, Popular Books).

MANGANESE. The production of manganese in the United States in 1899 amounted to 9935 long tons, valued at \$82,278, or at a rate of \$8.28 per ton, and was smaller than the output has been for several years. The imports of manganese ores, however, showed an increase over those of 1898. The ores supplying manganese are commonly divided into two classes—manganese ores proper and manganiferous iron ores, all those containing over 44 per cent. of manganese being considered to belong to the former class, while those carrying a smaller percentage are placed in the latter class, unless they have less than 3 per cent. of iron. The United States

production came from nine States, of which Virginia was the most prominent, being followed by Georgia and Arkansas. Alabama has ceased to produce this ore, but its place has been taken by Missouri, while North Carolina, Pennsylvania, and West Virginia are of minor importance, but contribute a small share. Colorado and the Lake Superior region both produce manganiferous iron ores, those from the former region being used in the manufacture of spiegeleisen and also to a large extent as a flux by the smelters of precious metals. The total quantity of manganiferous ores of iron produced in 1899 amounted to 761,845 long tons, those from Colorado containing from 16 to 43 per cent. of manganese, and those from the Lake Superior region from .68 to 8 per cent.

Owing to the small production of native ore, much material has to be obtained abroad to supply the ferromanganese and spiegel industry of the United States, and in 1899 the imports were 188,349 long tons, 64 per cent. greater than 1898, this increase being chiefly due to larger shipments from Russia, Brazil, Chile, British East Indies, and resumed shipments from Cuba. Some also came from Great Britain, Germany, and New Brunswick.

Among recent publications is one by J. C. Branner on the manganese deposits of Bahia and Minas, Brazil (*Transactions American Institute of Mining Engineers*, September, 1899). H. K. Scott presents an extended paper on the manganese ores of Brazil (*Journal of Iron and Steel Institute*, Vol. I., 1900). F. Klockman describes the manganese deposits of the Pyrenees (*Zeitschrift für praktische Geologie*, VIII., p. 265). Those of the Cabesses area are specially rich, and form an important source of European supply.

MANITOBA, a province of the Dominion of Canada, with an area of 73,956 square miles, and a population estimated at 193,000. Capital, Winnipeg, with a population estimated in 1900 at 42,534. The administration of the province is vested in a lieutenant-governor and a ministry. The Legislative Assembly, the only chamber of the province, consists of 40 members, elected on a manhood suffrage. The province has 4 seats in the Dominion Senate and 7 in the House of Representatives.

Industries and Agriculture.—The total value of the fishery catch for the calendar year 1898, including the Northwest Territories, amounted to \$613,355. The principal catch was: Whitefish, \$383,597, and pickerel, \$76,303. Total value of fish exported in 1899 was \$203,226, and the amount of capital invested in fisheries was estimated at \$256,581; fry distributed, 20,000,000. The principal mineral of the province is coal, of which 334,200 net tons were produced in 1899 in Manitoba and the Territories. The amount of coal exported during the year was 61,618 net tons. The agricultural returns for the calendar year 1899 give the total yield of wheat at 27,922,230 bushels, against 25,313,745 bushels in 1898; oats, 22,318,378 bushels, against 17,308,252 bushels in the previous year; potatoes, 3,226,395 bushels; rye, 64,340 bushels, and roots, 2,670,108 bushels. The live stock of the province consisted of 102,655 horses, 220,248 cattle, 33,092 sheep, and 66,011 swine. The total product of butter was 1,002,809 pounds, valued at \$188,027, while the production of cheese amounted to \$86,980.

Commerce.—The commercial statistics for the fiscal year 1899 show a considerable increase in the imports and a corresponding decrease in the exports. The total value of the former was \$5,695,715, against \$4,432,184 in the previous year. Of this total, \$960,722 came from United States and \$4,281,488 from Great Britain. Duties collected on imports during the year amounted to \$1,140,052. Total value of exports, both domestic and foreign, was \$2,092,988, against \$3,472,801 in the previous year. The number of commercial failures has increased from 45 during the calendar year 1899 to 89 in 1900, with \$514,264 liabilities and \$513,711 assets. The merchant marine of the province consisted at the end of the fiscal year 1899 of 82 steamers and 44 sailing vessels, with a total net tonnage of 9108.

Banks.—There were 46 chartered banks and bank branches in 1899, and the number of post-office savings banks increased from 29 in 1898 to 36 in 1899, with 1807 depositors and \$303,709 deposits. The government savings bank had in 1899, 4250 depositors and deposits, amounting to \$913,301. The clearings during the year amounted to \$107,786,798, against \$90,754,276 in the preceding year.

Railways and Post-offices.—The total railway mileage of the province at the end of the fiscal year 1899 was 1603, and the subsidies paid during the year amounted to \$2,366,777. The number of post-offices in the province of Manitoba and the Northwest Territories was 830, and the number of letters posted, 12,450,000. The 96 money-order offices issued during the year 63,159 orders, representing \$1,019,045.

Instruction and Charities.—The public schools of the province are free and undenominational, and religious teaching is allowed only with the consent of the parents. Of a total school population of 57,431 in 1898, 44,070 were enrolled in the 1250 public schools, and the average attendance was 24,958. There were also 3 collegiate institutions attached to the public schools, with a total attendance of 861, and a normal school for the training of teachers at Winnipeg. The 54 schools for Indian children had an enrolment of 1874 and an average daily attendance of 1168. The total amount received for educational purposes during the year was \$1,008,796.

\$175,874 contributed by the government and the remainder raised by taxation. The charitable institutions of the province consisted in 1898 of 4 general hospitals, 2 children's homes, 2 asylums for insane, and a few other institutions, with a total number of 7543 inmates. Total receipts for the year amounted to \$210,345, of which \$132,434 was contributed by the government. Total expenditures, \$188,749.

Finances.—The official returns for the calendar year 1899 state the amount of revenue at \$776,234, the main sources being as follows: Dominion subsidies, \$483,687; land titles and general fees, \$65,786, and charitable institutions, \$47,160. The expenditures for the same year amounted to \$972,462. The principal items of expenditure were: Public works, \$187,524; education, \$154,508; treasury department, \$155,691, and justice, \$124,516. The gross debt of the province at the end of the calendar year 1899 was \$8,190,688, and the total assets, excluding buildings and land, amounted to \$10,975,841, exceeding the gross debt by \$2,785,153.

History.—The declared policy of the new Conservative ministry, under the premiership of the Hon. Hugh John Macdonald, was the acquisition of the railways by the province; and as a step in that direction a memorial was addressed to the federal government, requesting it to confer upon the provincial government the power to fix railway rates and to use the railways at a moderate rent with the option of purchase. On March 18 a resolution was adopted by members of several Catholic churches in Winnipeg, requesting the Public School Board to take over the Roman Catholic schools now maintained by private subscription. But owing to the lack of support on the part of the premier, the board refused to comply with the request, and the Catholic school committee applied for assistance to the federal government. During July two measures of importance were introduced by the premier. One deals with the prohibition question, and provides for the total prohibition of the sale of liquors as a beverage, while the object of the other is to deprive the Doukhobors and the Galicians of the voting franchise for a period of seven years. On September 26 Mr. R. P. Rohlin was selected to succeed the Hon. Hugh John Macdonald, who had resigned the premiership.

MANUFACTURES. The industrial record for 1900 for a number of manufactured products is given elsewhere under the headings mentioned at the conclusion of this article. In almost every instance an increase is shown over the figures of production for 1899 for the United States. Indeed, for American manufactures the year 1900 was one of remarkable prosperity. While complete figures are not available for foreign countries, it is quite well known that a similar increase of prosperity was not enjoyed by their manufacturers. This fact, so far as England is concerned, is well indicated in the following abstract from the annual review of the engineering trades of Great Britain for 1900, published by Matheson & Grant, of London:

"For five years, and with only slight fluctuations, the engineering trades have been actively engaged. The year 1900 has not, however, been quite so profitable to manufacturers as 1899, when the maximum prices were obtainable without that increase in the cost of fuel, material, and labor which has since taken place. It is to the economies obtained by the full employment of their works as much as to high prices that manufacturing engineers have owed their profit, and it will be to a lessened demand that a reaction will be due. In some branches this time has already arrived, for though contracts in hand keep most of the works busy, new orders are not so abundant as in the spring. There is no longer difficulty in obtaining prompt delivery of material.

"Iron and Steel.—Pig iron, which a year ago was selling at 65 shillings per ton alike in Scotland and Middlesborough, had risen to 70 shillings and 75 shillings, respectively, in April, the north country iron being thus dearer than Scotch, instead of being cheaper, as in normal times. Cargoes from America arrived in this country during the spring and summer at lower prices than those ruling here; a continuance of such imports was threatened; and as, meanwhile, the price of coke had risen to an unprecedented level, the owners of blast furnaces in this country found difficulty in selling their product on remunerative terms. The famine in coke was ended; the price fell during the summer and autumn as the demand for pig iron slackened, and at present the prospects of the iron makers are rather gloomy. Finished iron has followed much the same course. The heavy steel trade has had to meet continental and American competition. Owing to the great demand during the summer and to the concert among manufacturers, the prices of English rails reached £7 10s. per ton for heavy sections; and, in consequence, several large purchases for the colonies and India, which in ordinary course would have been supplied here, were bought from America. The present price of heavy rails is about £6 per ton, and there has been a corresponding fall in the values of the structural steel used by ship and bridge builders.

"Ship-building.—The total production of the world during the past year has been 2,700,000 tons, which is slightly less than in 1899, and prices have been distinctly lower, due rather to improved methods than to reduced profits. Although Great Britain still holds the first place, the German ship-builders are nearer in their output

than at any previous time. In the United States the experience gained during past years in the construction of large steamers for lake and river service is facilitating greatly the newer enterprise of building ocean steamships, which is developing so rapidly.

"Mechanical engineers continue to be busy in almost every branch, but with less favorable prospects than in January, 1900. The electrical trades have been actively engaged, and there are important new developments in view. Electrical haulage, successfully adopted on the tube-tunnel railways of London, is being also tried on the older metropolitan underground lines, and these will probably lead to the adoption of the system on surface railways, especially for suburban traffic. Motor cars for the carriage of merchandise on the highways are being manufactured in larger numbers, coke fuel and steam-engines affording the requisite power. Gas-engines of large power still occupy the attention of engineers.

"*Locomotives and Rolling Stock.*—These trades have been continuously active during the past year, and the demands of the home railways, added to those from India, the colonies, and South America, have enabled the manufacturers to obtain high prices. Present engagements alone will keep most of the firms busy for the coming year, and they will have the advantage of buying materials at lower rates. There is not much room for novelties. Increasing traffic and heavier trains call for powerful engines, but within the limits imposed by the gauge and fixed structures there is little scope for improvement. Larger boilers are, however, available in some cases, and a higher pressure of steam is adopted in others. Compound engines have not had the success expected by their inventors. The makers of passenger carriages are busy, both for home and export, and many of them are supplementing their ordinary output by making tramway cars."

The accepted index in the United States of the activity of manufactures is the record of exports of manufactured goods and of the imports of raw materials for manufacture kept by the Treasury Bureau of Statistics. According to these figures, the exports of manufactured goods from the United States during 1900 were as follows:

	1900.
Iron and steel manufactures.....	\$121,858,344
Wood and manufactures of.....	50,594,819
Tobacco and manufactures of.....	35,431,940
Cotton, manufactures of.....	23,980,001
Agricultural implements.....	16,094,885
Instruments, scientific.....	6,431,301
Cars, carriages, etc.....	6,349,045
Paper and manufactures.....	6,215,559
Books, maps, etc.....	2,941,915
Rubber manufactures.....	2,364,157
Spirits, distilled.....	2,278,111
Malt liquors.....	2,137,527
Clocks, watches, etc.....	1,974,902
Glass, etc.....	1,933,201
Paints and colors.....	1,902,058
Explosives.....	1,888,741
Brass manufactures.....	1,866,727
Soap.....	1,773,921
Wool, manufactures of.....	1,253,602

The following table has also been compiled from the same official figures to show by groups the imports of merchandise to America:

Free and Dutiable.	Fiscal Years.			
	1895. Value, 1 = 1000.	Per Cent.	1900. Value, 1 = 1000.	Per Cent.
Food and live animals.....	\$235,740	32.21	\$218,479	25.71
Crude articles of domestic manufacture.....	191,119	26.11	302,264	35.57
Manufactured articles for use as materials in me- chanical arts.....	73,656	10.06	88,433	10.41
Articles manufactured for consumption.....	138,197	18.88	128,885	15.17
Articles of voluntary use, luxuries.....	93,255	12.74	111,652	13.14
Totals.....	\$731,967	100.00	\$849,713	100.00

The columns of percentages are of particular interest in this table. Briefly, they show that in the five years between 1895 and 1900 there has been a material increase in the quantities of crude materials imported to be turned into manufactured products by American factories, while during the same time the imports of manufactured goods have either remained at a practical standstill or else have decreased. In a broad, general way this, of course, shows that the country is coming to depend more and more upon its own factories to supply the home demand. See COTTON; SILK; WOOL; IRON AND STEEL; LOCOMOTIVES; CARS; CEMENT, HYDRAULIC; BUTTONS; COCOA-NUT-PALM PRODUCTS; RUBBER.

MANUSCRIPT SOCIETY OF NEW YORK, formerly called the Society of American Musicians and Composers, aims to promote the interests of musical composition in America. It has 500 members, and holds six private meetings and two public concerts annually. President, Frank Damrosch; secretary, Lucien G. Chaffin, 26 East Twenty-third Street, New York City.

MANVERS, Third Earl, SYDNEY WILLIAM HERBERT PIERREPONT, died in Nottinghamshire January 16, 1900. Born March 12, 1825, he was educated at Christ Church, Oxford, graduating in 1846. He represented South Notts in the House of Commons, as a Conservative, from 1852 to 1869, when he vacated his seat on succeeding his father to the title. His eldest son, the Viscount Newark, succeeds him.

MARBLE. See BUILDING STONES.

MARCOET, WILLIAM, M.D., F.R.S., died at Luxon, March 4, 1900, in his seventy-second year. He was born and educated in Geneva, and at the age of 18 began his professional study in the department of medicine at Edinburgh University. He devoted himself especially to laryngology, his interest in which, added to his love for mountain climbing, led him to investigate the influence of altitude on respiration, his experiments, which resulted in not a little valuable scientific information, being carried on both among the high Alps and on the peak of Teneriffe. He was a fellow of the Royal College of Physicians, was, at one time, assistant physician to Westminster Hospital and the Hospital for Consumption and Diseases of the Chest, Brompton, and in 1888 was elected president of the Royal Meteorological Society. He wrote *Southern and Swiss Health Resorts* (1883) and *A Contribution to the History of the Respiration of Man* (1897).

MARCHANT, The Honorable FELIX GABRIEL, premier of Quebec, died September 25, 1900, at the age of 68. He entered the legislative assembly of Quebec in 1867, and in the Liberal cabinet of 1878 he was first provincial secretary and afterward commissioner of crown lands. From 1887 to 1892 he was speaker of the House. When the Conservatives came into power he was leader of the Opposition, and in 1897 became premier and provincial treasurer. During the sixties Mr. Marchand took part in the French-Canadian uprising and was in active service during the Fenian raids. Being interested in journalism, he founded the French Liberal organ, *Le Franco Canadien*, in 1860 and was editor of *Le Temps* of Montreal. He also wrote comedies which enjoyed great popularity. *Les Faux Brillants* (1885) is most widely known.

MARINDIN, Sir FRANCIS ARTHUR, K.C.M.G., of the Royal Engineers, retired, died in London April 21, 1900. He won his reputation as an inspector of railways and several reforms in railway management were due to his initiative. Born at Weymouth May 1, 1838, he was educated at Eton and Woolwich, and entered the Royal Engineers in 1854. For his work on the Egyptian state railways he was created a C.M.G. in 1887.

MARINE BIOLOGICAL ASSOCIATION. See ZOOLOGICAL STATIONS (paragraph Foreign Stations).

MARRIAGE, MEDICAL CONTROL OF. Following the example of North Dakota and Wisconsin, set in 1899, the Tri-State Medical Society of Tennessee, Alabama, and Georgia, at a meeting held in the autumn of 1900, took measures to secure legislation in those States to regulate or prevent the marriage of habitual criminals, drunkards, persons afflicted with incurable diseases, and persons addicted to the use of harmful drugs. Early in the year a pamphlet was issued by Joseph Wolff, of Boulder, Col., containing a bill to regulate the granting of marriage licenses and also to provide penalties for violation of its provisions. This bill provides, among other things, for the appointment of physicians by county judges, "whose duty," to quote from the act, "it shall be to pass upon all applications for license to marry, and no such license shall be granted to persons contemplating marriage, unless they shall have received from the board a certificate, setting forth that such applicants are free from the following ailments: Dipsomania, organic or true insanity, hereditary insanity, primary, secondary, or tertiary syphilis, tuberculosis of the lungs known as consumption, tuberculosis of other vital organs, hereditary asthma, gonorrhoea, gleet, scrofula, and epilepsy, and that there is no blood relationship between them nearer

than the fourth degree. And in no case shall such certificate be granted to any person who shall have a notorious reputation for moral depravity, or who shall at the time of application be on trial, under bonds, or in prison, to answer for a felony. Full discretionary powers are given to refuse certificates for other manifest marital unfitnesses not enumerated that would be likely to entail defectiveness or degeneracy upon the offspring of those applying, or prevent the applicants from living together in peace. And no such certificate shall be granted until after a careful professional examination by the Board of Medical Examiners of both the man and the woman making application therefor, except where the woman's age shall be over 45 years, who shall, therefore, be exempt from such examination."

Such laws, of course, would fail to be effectual unless enacted in all the States. A second difficulty which unfortunately attaches itself to all measures involving the appointment of public officials would be that physicians of inability and devoid of scruple would in time be appointed through political influence to make the examinations, and the law would be practically a dead letter. But until these difficulties really arose such a law would lessen the burden of the tax-payer, now called on to support the defective, degenerate, and pauper offspring of those who never should have been allowed to propagate their species. See *INSANITY*.

MARTIN, Rev. Dr. WILLIAM ALEXANDER PARSONS, president of the Imperial University at Peking, was at Peking during the storming of the legations from June 20 to August 14, 1900. He has since written articles and delivered lectures on the subject in the United States. Dr. Martin was born at Livonia, Ind., April 10, 1827; graduated from the State University and studied at the Presbyterian Seminary at New Albany, Ind. In 1850 he went to China as a missionary and was for six years stationed at Ning-po. In 1858 he acted as interpreter for William B. Reed, the United States minister, in negotiating the treaty with China. From 1863 to 1868 he was missionary at Peking. Meanwhile Dr. Martin made himself of great service to the Chinese by translating into their language Woolsey's *International Law*, a work which has since been the standard authority on the subject in China. As a result he has acted as adviser of the Chinese government on matters of international law in several disputes with European Powers. In 1885 he was made a mandarin of the third class and in 1898 a mandarin of the second class. Dr. Martin was for many years at the head of a school founded by Sir Robert Hart to teach English to the Chinese and to train them for the government service. When the Imperial University of China was recently founded he was made its president. He is the author of *The Chinese: Their Education, Philosophy, and Letters; A Cycle of Cathay, and Chinese Legends and Other Poems*, and has published in Chinese various works on the evidence of Christianity, on natural philosophy, and international law. From 1897 to 1898 he was editing the *Science Monthly*, published in Chinese.

MARTINEAU, JAMES, D.D., LL.D., D.C.L., Litt.D., a leader in religious and philosophical thought in England, died at his home in London, January 12, 1900. The descendant of a Huguenot family which emigrated from France in 1684, he was born at Norwich April 21, 1805, being the sixth child in a family in which the well-known authoress, Harriet Martineau, was the fifth. After attending the grammar school of his native town he was a pupil for two years—1819-21—at Bristol in the school of Dr. Lant Carpenter, a Dissenter, from whom he received a lasting impress. At this time he intended to enter the profession of civil engineering, and he pursued this study during the following year, but his speculative and spiritual nature led him to turn to the ministry, notwithstanding his father's warning, "You are courting poverty." Nonconformists were not then admitted to the great English universities, and accordingly he entered in 1822 Manchester New College, a Unitarian institution, then at York. After finishing the course and acting for a short time as the responsible head of Dr. Carpenter's school, he was ordained by the Synod of Munster in 1828, and entered upon the duties of junior minister in a Dublin church. In 1832 he accepted a call to Paradise Chapel, Liverpool, where he was pastor for twenty-five years. Here it was that his wide reputation began. In 1839 a number of evangelical clergymen undertook in a series of sermons to show the fallacies of Unitarianism; Martineau, J. H. Thom, and Henry Giles replied to the attacks in a series of thirteen papers, which were so cogent that the "Liverpool controversy" is still pointed to with pride by Unitarians. In the following year—1840—Martineau accepted the chair of mental and moral philosophy in Manchester New College, a position he retained until 1884. He went to London when the college was removed thither in 1857, and two years later became associated with John James Tayler, the principal of the college, in the pastorate of Little Portland Street Chapel; in 1861 he became sole pastor, remaining as the head of the parish until 1872. Upon the death of Mr. Tayler in 1869 he succeeded him in the principalship of the college, a position he retained to the time of his retirement from public life in 1885. During the many years of his activity as preacher and teacher the work accomplished by Dr.



JAMES MARTINEAU. (From a crayon drawing.)

(Courtesy of *The Outlook Co.*)

Martineau was remarkable. Besides the performance of his regular duties he found time to contribute copiously to reviews and to write a series of books that take exceedingly high rank in religious thought and philosophical scholarship.

"On looking back over the remembered work of fourscore years," said Dr. Martineau of his own life, "I find it all summed up in the simplest of arts—the unserved expression of whatever took hold of me as most true and good." The rise of Martineau to a place in English thought marked the time also of the rise of sensationalism in metaphysics and utilitarianism in ethics. Though a liberal in religion to such a degree that he was often grossly misrepresented, he always stood against what may be called this unspiritual philosophy with all his strength. Though a believer in a historical divine manifestation, he did not found religion on it, but rather on the theistic conception of the community of nature between man and God. To Martineau religion is what another has called "the life of God in the soul of man." To him the primary evidence of revelation is not objective and external, but subjective and internal; right and wrong are "ultimate facts of consciousness," and the fundamental idea of Christianity is—to use his own words—"the ascent through Conscience into communion with God." He was pre-eminently the teacher of the life of the spirit and not of the letter; hence he strove to show the "moral innocence of mental error," and "to relieve Christian life from reliance on theological articles, to save it from conflict with the knowledge and conscience of mankind." His attitude toward conscience and revelation may be seen in the following: "While regarding the human conscience as the only inward revealer of God, we have faith in Christ as his perfect and transcendent outward revelation. We conceive that Jesus of Nazareth lived and died, not to *persuade* the Father, not to *appease* the Father, not to make a sanguinary *purchase* from the Father, but simply to *show* us the Father."

Though ecclesiastically classed with the Unitarians, Dr. Martineau disliked the name, since his life-work was a protest against sectarianism and a striving for, if not a prophecy of, the catholicity of Christian faith—a faith not fettered by dogma, but marked by the growth of the divine in man. Shortly after his death a critic said of him: "He will be remembered as one unsurpassed among the great Anglo-Saxon religious leaders, in his rare combination of exact scholarship, philosophic breadth, prophetic insight, devotional spirit, and the exquisite and masterful English in which all his luminous nature found its illuminating expression." Among his publications may be mentioned *The Rationale of Religious Enquiry* (1836); *Hymns for the Christian Church and Home* (edited 1840); *Endeavors After the Christian Life* (two vols., 1843-47); *Hours of Thought on Sacred Things* (two vols., 1876-80); *A Study of Spinoza* (1882); *Types of Ethical Theory* (two vols., 1885); *A Study of Religion, its Sources and Contents* (two vols., 1887); *Essays, Reviews, and Addresses* (four vols., 1890-91). Of these works the *Types of Ethical Theory* and the *Study of Religion* may be singled out as books of pre-eminent excellence.

MARTINIQUE, one of the Lesser Antilles belonging to France, is situated between the Windward and Leeward groups, and covers an area of 380 square miles. Its population at the end of 1899 was estimated at 194,272. The principal products are sugar, coffee, tobacco, and cotton, while the chief industry is the distilling of rum. The official returns for 1899 show a considerable increase in the commerce of the island over the preceding year. The imports for that year amounted to 27,004,526 francs against 24,368,798 francs in 1898, while the exports increased from 22,344,860 francs to 26,603,147; of the total imports, 14,181,627 francs came from France and 7,560,298 francs from the United States. The imports of coal from the United States in 1899 amounted to 6869 tons, a considerable increase over 1898, due mainly to the strikes in Great Britain. The principal articles of export in 1899 were sugar, 31,664 tons, and rum, 3,577,760 gallons. Of the total exports, 22,871,760 francs represented the product of the colony, while the rest was re-exported. The revenue and expenditures for 1898 were 5,354,000 and 7,150,000 francs respectively. The principal sources of revenue are taxes on liquor, land, and business, stamp taxes and import and export duties. In 1898 the colony contributed 71,060 francs to the French government, while the total expenditure of the latter on the colony amounted, according to the budget for 1900, to 2,530,837 francs. The educational institutions of the colony in 1898 comprised a law school and 3 secondary schools, with a total of 487 pupils, 38 primary schools, with 10,304 pupils, and 13 clerical and private schools. The largest and the most important town of the island is St. Pierre, with a population of 25,000. The seat of the government is Fort de France. The government of the colony is administered by a governor, assisted by an elected general council. The colony sends to Paris 2 deputies and a senator. As a result of the refusal on the part of the cane planters to grant a demand for higher wages there were serious riots among the negro laborers in Ste. Marie and François. More than forty persons were killed and many injured and much damage was done by the rioters. An advance of 25 per cent. was rejected by the laborers, and it was finally decided to submit their

grievances to arbitration. The employers claim that it would be impossible for them to meet the competition of the sugar-beet planters if they should comply with the demands of the laborers.

MARYLAND, a middle Atlantic State, has an area of 12,210 square miles. The capital is Annapolis.

Mineralogy.—Coal is mined in only two counties—Allegany and Garrett—and 98 per cent. of the product is from Allegany County. The output in 1899 was 4,807,396 short tons, spot value, \$3,667,056. During the year machine undercutting was introduced for the first time, although the relative tonnage won by machines was not large. In 1899 there was a decrease from the preceding year of \$113,253 in the aggregate value of the quarry product. The several outputs were: Granite, \$423,823; sandstone, \$24,426; slate, \$93,595; marble, \$77,000, and limestone, \$235,225—in all, \$854,069.

Agriculture.—The following shows the production and value of the principal crops for 1900: Corn, 15,232,802 bushels, \$6,245,449; wheat, 15,187,848 bushels, \$10,783,372; oats, 1,783,416 bushels, \$552,859; rye, 408,028 bushels, \$212,175; buckwheat, 111,525 bushels, \$63,569; potatoes, 1,269,455 bushels, \$685,506; hay, 302,292 tons, \$4,247,203. The *Bulletin* of the National Association of Wood Manufacturers estimated the wool product for 1900 as follows: Number of sheep, 133,341; wool, washed and unwashed, 666,705 pounds; scoured wool, 353,354 pounds.

Manufactures.—In 1899 there were 730 manufacturers of cigars and 36 of tobacco, with a combined output during the calendar year of 367,461,298 cigars, 1,109,415 cigarettes, 110,479 pounds of fine-cut, 12,108,415 pounds of smoking tobacco, and 1,869,026 pounds of snuff. Grain and fruit distilleries in operation during the fiscal year ending June 30, 1900, numbered 42. The production of fruit brandy was 45,018 gallons; amount of distilled spirits gauged, 17,220,372 gallons, and production of fermented liquors, 1,025,028 barrels. The amount of spirits rectified in Maryland, Delaware, and the District of Columbia, which constitute one collection district for internal revenue, was 5,547,398 gallons. The amount of pig iron manufactured in Maryland during 1899 was 234,477 long tons, and during 1900, 290,073 long tons, an increase over the preceding year of 43,503 long tons for 1899, and 55,596 long tons for 1900.

Commerce.—The imports of merchandise at the port of Baltimore during the fiscal year ending June 30, 1900, aggregated in value \$19,045,279, an increase in a year of \$9,894,124; and the exports, \$115,530,378, an increase of \$8,374,138; total foreign trade of the year, \$134,575,657. The number and tonnage of the vessels in foreign trade at Baltimore was: Entered, 911, of 1,677,385 tons; cleared, 925, of 1,775,269 tons; total, 1836, of 3,452,654 tons.

Banks.—On October 31, 1900, there were 73 national banks in operation and 6 in liquidation. The capital stock aggregated \$15,166,660; circulation outstanding, \$7,487,228; deposits, \$57,625,210, and reserve held, \$15,736,005. The State banks June 29, 1900, numbered 26, and had capital, \$1,783,410; deposits, \$7,106,607, and resources, \$9,932,687; loan and trust companies, 6, with capital, \$4,616,000; deposits, \$4,201,875, and resources, \$13,785,359; private banks, 6, with capital, \$50,501; deposits, \$229,653, and resources, \$463,735; and mutual savings banks, 18, with 171,130 depositors; deposits, \$57,857,976, and resources, \$60,758,477. The exchanges at the Baltimore clearing house for the year ended September 30, 1900, aggregated \$1,072,172,396, a decrease of \$135,173,460 in a year.

Railways.—Only 2 miles of railroad were built during the calendar year 1900, making the total mileage of the State 1,359.54.

Education.—In 1899 the school population was 357,600; enrolment in public schools, 229,332; average daily attendance, 132,685; average duration of school, 188 days. There were 5127 teachers, 2503 schools, and public school property valued at \$4,750,000. The revenue was \$2,932,396, and expenditures, \$2,912,527, of which \$2,132,954 was for teachers' and superintendents' salaries. There were 48 public high schools, with 158 teachers and 4090 students; 37 private secondary schools, with 207 teachers and 1975 students; 1 public normal school, with 12 teachers and 406 students; and 3 private normal schools, with 11 teachers and 79 students. Eleven colleges and universities for men and for both sexes reported 234 professors and instructors, 1856 students, and a total income of \$515,248; 1 school of technology reported 56 professors and instructors, 287 students, and a total income of \$998,171; and 5 colleges and seminaries for women reported 101 professors and instructors, 747 students, and a total income of \$110,051. The professional schools comprised 6 theological schools, with 62 instructors and 519 students; 2 law schools, with 18 instructors and 278 students, and 8 medical schools, with 210 instructors and 1183 students.

Finances.—The report of the State comptroller shows that the receipts for the fiscal year ending September 30, 1900, aggregated \$3,622,493, which, added to \$707,926 (the balance in the State treasury at the beginning of the fiscal year), gives

a total of \$4,330,419. Disbursements amounted to \$3,480,534, leaving a balance, September 30, 1900, of \$849,885. The total funded debt of the State was \$6,309,326, as an offset to which the State held bonds, stocks, and cash to the credit of the sinking funds, aggregating \$3,424,057, leaving the net debt, September 30, 1900, \$2,885,269. The total assessed valuation of property was \$616,719,782, and the tax rate, 17 $\frac{3}{4}$ cents per \$100.

Population.—According to the United States census, the population in 1890 was 1,042,390; in 1900, 1,190,050; increase for the decade, 147,660. The population of Baltimore, the largest city in Maryland, was 434,439 in 1890, and 508,957 in 1900. Baltimore is the sixth largest city in the United States.

Legislature.—Several acts were passed by the Maryland Legislature relative to the city of Baltimore. An act approved April 10 amended that section of the charter of Baltimore (1898) which provided that all mercantile or manufacturing establishments employing women should furnish suitable seats for employees, and should permit them to use these seats for a reasonable length of time each day. The section as amended provided that employers should not be deemed to maintain suitable seats for the use of female employees, as directed, unless these employees were permitted to use the seats to such an extent as was reasonable for proper rest, and that the question of what was thus reasonable should be determined by the jury or the court acting as a jury in any prosecution arising under the law. An act was approved on April 7 authorizing the city of Baltimore to issue \$5,000,000 of city stock at a rate not to exceed \$1,000,000 per year to pay at the time for work done on grading, curbing, and paving the streets of Baltimore. The total amount so expended was to be assessed upon property contiguous to the improved property, and was to act as a lien upon the assessed property, and the money collected thereunder was to be used to repay the money advanced by the city. An act was approved on April 5 amending that section of the Baltimore charter (1898) which directed railways to charge 5 cents for regular fares, 3 cents for children between 4 and 12, and 3 cents, and no more, for transfers; the section as amended to take effect July 1, 1900, made it obligatory upon the United Railways and Electric Company of Baltimore to give free transfers at all points of intersection of their lines upon payment of a cash fare, except in cases where such transfers would return the passenger in the general direction from which he had come. An act was approved on April 5 authorizing the mayor and city council of Baltimore to issue city stock to the extent of \$1,350,000 for the purpose of erecting and equipping a municipal lighting plant, provided, however, that the issue of this stock was duly approved by a majority of the voters of the city. On the same day an act was passed forbidding any private lighting company in Baltimore to charge more than \$1.10 per thousand cubic feet for illuminating gas. On April 7 an act was approved directing the Appeal Tax Court of Baltimore not to issue any permit for the erection of new buildings in the city until all taxes had been paid upon the land on which it was proposed to erect the buildings. In order to abate the large number of petty larcenies committed by children, an act was passed prohibiting any person in Baltimore from buying from children under 16, unless personally known to the purchaser or accompanied by their parents or guardians, "any hardware, plumbing, gas or electric fixtures, tools, household utensils, books, jewelry, poultry, or animals of any kind." It was stated that the section of this act which was most largely applied to actual conditions was that in regard to poultry. An act was passed proposing an amendment to the constitution, to be voted upon at the regular State election in November, 1901. This amendment provided for the division of the city of Baltimore into four legislative districts as nearly as possible, of equal population and contiguous territory. Each of these legislative districts, as also each county in the State, was to be entitled to one State senator to serve for four years.

Claims Against the United States.—Two joint resolutions were passed by the Legislature, arising from claims of the State against the United States, resulting from the Civil War. One of these resolutions was a petition to Congress to appropriate \$200,000 for the benefit of the town of Frederick. The resolution set forth that the town during the Civil War had been mulcted by the Confederates to the extent of \$200,000 or over, because the State, having sent all its available troops into the service of the Union, was unable to defend it. Ever since that time Frederick had unjustly carried a large bonded indebtedness, and it was thought that the federal government should make the principal of this indebtedness good. On April 5 an act was approved directing the governor to appoint a commission to prosecute the claims of Maryland arising prior to 1868 against the United States. The governor was authorized to appoint a second commission if for any reason the one he originally appointed was unable to go on with the work. It was provided that the total payment to be given to the commission who prosecuted the claims was to be a percentage, not to exceed 30 per cent. of the money recovered from the United States. On April 7 an act was passed authorizing the governor to appoint an agent to recover from the

United States the balance due to Maryland on her claim against the government arising out of the furnishing and equipping of Maryland troops for the United States volunteers in the Spanish War.

An act was approved on March 13 for the encouragement of manufacturing interests in Annapolis providing that the city might, whenever it deemed it expedient to do so, abate for one year taxes upon tools, implements, machinery, manufacturing apparatus, or engines used by corporations engaged in any manufacturing industry in the city. But this abatement of taxes was not to extend to real estate, and was required to be extended equally to all corporations engaged in the same branches of manufacturing. The counties of Wicomico, Worcester, and Washington were also authorized to exempt from county taxation lands and buildings used for manufacturing purposes.

An act was approved on April 5 providing that all corporations, with the exception of railway companies, which did not actually begin business within two years after their charters were granted, should pay, in addition to the other taxes required of them by law, a tax equal to one-eighth of 1 per cent. of the amount of the subscribed capital stock; and the corporate rights and franchises of such corporations should be suspended until this special tax was paid.

An act was approved on March 30 providing that every employer should grant his employee a sufficient time, not exceeding four hours, to cast his ballot; and if the employer did not so do, he might be punished by a fine not exceeding \$500, or by imprisonment for six months.

An act was approved on April 10 providing that any married woman might make business contracts with her husband or form a partnership with him or with any other persons, precisely as she might do if unmarried. And that a married woman might sue or be sued to insure the fulfilment of such contract in the same manner as if she were unmarried.

In accordance with the findings of a State Boundary Commission, consisting of J. S. Black, of Pennsylvania, and Charles J. Jenkins, of Georgia, by which it appeared that the State line between Maryland and Virginia was in doubt, a resolution was passed, in conjunction with a similar resolution passed by the Virginia Legislature, appointing a commission of six, who should confer with a similar commission appointed by Virginia, and should determine and report to the next Legislature the true boundary-line between Maryland and Virginia along the Potomac River from the Great Falls, above Washington, to the mouth of the river.

An act was approved on April 5 providing for a commission of three persons, to be appointed by the governor, to examine the State laws relative to taxation and prepare and submit to the next Legislature such amendments as they deemed advisable. By another act a board of seven commissioners was appointed to examine the State laws relative to banks, fidelity and trust companies, and building and loan associations, and to report their findings to the Legislature of 1902.

Amendments to the Constitution.—Two amendments to the constitution were proposed relative to the reapportionment of representatives in the State Legislature. One of these, in regard to apportionment of State senators, has already been noted under Baltimore. The second provided that after the publication of the returns of the census for 1900 the representatives in the House of Delegates should be reapportioned upon the following basis: Counties having less than 18,000 inhabitants, 2 delegates; counties having between 18,000 and 28,000 inhabitants, 3 delegates; counties having between 28,000 and 40,000, 4 delegates; counties having between 40,000 and 55,000, 5 delegates; counties having over 55,000, 6 delegates, and each of the four legislative districts into which it was proposed to divide Baltimore to be entitled to the number of delegates to which the largest county should be entitled under the provisions of this amendment. Both of these amendments were to be voted upon November, 1901. By another act of the Legislature an amendment was proposed to make any State attorney removable from office should he receive any fee or reward whatsoever for his legal services other than those prescribed by law.

Elections.—The State election in 1899 resulted in a victory for the Democratic nominee for governor, J. Walter Smith, by a plurality of 12,000. In the election in 1900 for United States congressmen, Josiah L. Kerr (Rep.) was elected to fill the unexpired term in the 56th Congress of J. Walter Smith, who had resigned to become governor, and W. H. Jackson (Rep.) was elected congressman for the same district in the 57th Congress; A. A. Blakeney (Rep.) was nominated and elected to the 57th Congress in place of William B. Baker (Rep.), and J. W. Denny (Dem.) was defeated by Charles R. Schirm (Rep.). In the 56th Congress 4 of Maryland's representatives were Republicans before J. W. Smith's resignation, and 5 afterward; in the 57th Congress all the representatives will be Republican. The State Legislature in 1899 consisted, in the Senate, of 8 Democrats and 18 Republicans, and in the House of 42 Democrats and 49 Republicans. In 1901 the Legislature will consist, in the Senate, of 15 Democrats and 11 Republicans, and in the House of 65 Democrats and

26 Republicans. In the national election McKinley received 136,212 votes, and Bryan, 122,271. In 1896 McKinley received 136,959 votes, and Bryan, 104,735. So that McKinley's plurality was cut down from 32,224 to 13,941.

State Officers and National Representatives.—State officers for 1900: Executive—governor, J. W. Smith (Dem.); secretary of state, Richard Dallam (Rep.); comptroller, J. W. Hering; treasurer, T. J. Shryock (Rep.); adjutant-general, L. A. Wilmer; attorney-general, Isidor Rayner (Dem.); superintendent of education, E. B. Prettyman (Rep.); commissioner of insurance, F. A. Kurtz (Rep.).

Court of Appeals: Chief judge, Jas. McSherry; associate justices, D. Fowler, A. Hunter Boyd, Henry Page, I. T. Jones, J. P. Briscoe, S. D. Schmucker, and James A. Pearce; clerk, Allan Rutherford—all Democrats, except Schmucker and Rutherford.

Congressional representatives for 1900 (56th Congress): J. W. Smith, W. B. Baker, F. C. Wachter, J. W. Denny, Sydney E. Mudd, G. A. Pearre—all Republicans, except Smith and Denny.

Senators for 1900 (56th Congress): George L. Wellington (until 1903), from Cumberland, and Louis E. McComas (until 1905), from Williamsport—both Republicans.

State officers for 1901: Executive—governor, J. W. Smith; secretary of state, W. Bateman; treasurer, Murray Vandivir; comptroller, J. W. Hering; adjutant-general, John S. Saunders; attorney-general, Isidor Rayner; superintendent of education, M. B. Stevens; commissioner of insurance, L. Wilkinson; commissioner of public lands, E. Stanley Toadvin—all Democrats.

Judiciary: Same as for 1900.

Congressional representatives for 1901 (57th Congress): W. H. Jackson (Salisbury), A. A. Blakeney (Franklinville), F. C. Wachter (Baltimore), Charles R. Schirm (Baltimore), Sydney E. Mudd (La Plata), George A. Pearre (Cumberland).

Senators for 1901 (57th Congress): Same as for 1900.

MASHONALAND and MATABELELAND. See RHODESIA.

MASON, THOMAS HENRY, C.B., British admiral, retired, died at Ipswich February 20, 1900. Born in 1811, he entered the navy in 1823 and took part in the Chinese War, being present at the capture of Canton and Amoy. He was decorated for meritorious services, and in 1879 was promoted to the rank of admiral.

MASSACHUSETTS, a New England State of the United States, has an area of 8315 square miles. The capital is Boston. Massachusetts was one of the original thirteen States.

Mineralogy.—The following estimates for the stone industry in 1899 were made by the State Bureau of Labor Statistics: Capital invested, \$4,802,662; stock used, \$1,687,835; total value of finished product, \$6,332,181; persons employed, 5277; wages paid, \$2,787,412. Massachusetts ranked first among the States in quarrying granite, the value of the total output being \$1,798,294. Other quarry products were sandstone, \$131,877; marble, \$59,416; limestone, \$168,147; Massachusetts and Connecticut together yielded 29,611 long tons of iron ore in 1899 (all of the brown hematite variety), the value of which was \$77,989.

Agriculture.—The following shows the production and value of the principal crops for 1900: Corn, 1,545,346 bushels, \$834,487; oats, 550,786 bushels, \$209,299; barley, 42,854 bushels, \$29,569; rye, 133,747 bushels, \$100,310; buckwheat, 37,179 bushels, \$26,769; potatoes, 2,261,454 bushels, \$1,492,560; and hay, 550,067 tons, \$9,571,166. The *Bulletin* of the National Association of Wool Manufacturers estimated the wool clip for 1900 as follows: Number of sheep, 39,632; wool, washed and unwashed, 237,792 pounds; scoured wool, 123,652 pounds.

Manufactures.—During the calendar year 1900, 11 new cotton mills, containing 115,700 spindles and 1650 looms, were built. The year 1900 also marks the completion of 5 other textile mills, 1 of which, for the manufacture of crash towels from American flax, is predicted to be the beginning of an important industry in the State.

The product of the industries of the State during 1900 approximated in value \$1,000,000,000, representing a year's labor of 500,000 wage earners, whose annual earnings aggregated about \$225,000,000. The following shows the number of persons employed in the principal manufacturing and mechanical industries of the State in 1900: Textiles, 127,117; boots, shoes, and leather, 82,624; building, 77,092; clothing, 45,488; food preparations, 9045; machinery and metallic goods, 58,457; woollen goods, 21,374; paper and paper goods, 9887; all other industries, 61,413; total, 492,497. During the year 1899, 160 new firms or industries were established. The capital invested in the manufacture of boots and shoes was \$26,728,316; cotton goods, \$126,159,262; machines and machinery, \$35,178,135; and woollen goods, \$28,416,883. The value of the boot and shoe product for 1899 was \$150,250,849; cotton goods,

\$100,958,142; machines and machinery, \$46,548,977; and woollen goods, \$33,331,731. The value of the manufactured product was materially greater, especially in the leading industries, than in 1898. In 1899 there were 668 manufacturers of cigars and 25 of tobacco, and their combined production for the calendar year was 113,218,313 cigars, 5,550,540 cigarettes, 15,156 pounds of smoking tobacco, and 75,116 pounds of snuff. Grain and fruit distilleries in operation numbered 12, and the amount of spirits rectified during the fiscal year ending June 30, 1900, was 4,419,623 gallons; distilled spirits gauged, 11,120,981 gallons; and fermented liquors produced, 1,802,736 barrels. During the year ending March 1, 1900, the number of hogs packed and marketed at Boston was 1,647,000.

Commerce.—The imports of merchandise at eleven ports during the fiscal year ending June 30, 1900, aggregated in value \$72,402,143, and the exports, \$112,227,830. The trade in gold and silver was: Imports, \$134,602; exports, \$27,884, making the total foreign trade \$184,792,459, a net increase for the year of \$4,179,668. The vessels engaged in the foreign trade entered at the port of Boston numbered 1862, with a gross tonnage of 2,236,066 tons; cleared, 1810, gross tonnage, 1,909,121 tons. Boston is now the second port in the United States in the volume and value of its foreign trade.

Railways and State Highways.—No new steam railway construction was reported for 1900, and the total mileage was the same as in 1899, 2111.79. Of the street railways, the electric track mileage, September 30, 1900, was 1967.80, an increase of 235.96 miles in a year; horse track, 4.76, showing no increase. Forty-eight of the 118 street railway companies in the State paid dividends varying from 1 to 8 per cent., and 70 companies declared and paid no dividend. The aggregate capital stock of the 118 companies was \$48,971,168, or \$44,273 per mile of track. The total number of passengers carried during the fiscal year ending September 30, 1900, was 395,027,198, an average of 51 passengers per round trip—one more than in 1899. During 1900 considerable progress was made on Boston's new elevated railway (see RAPID TRANSIT, paragraph Boston), and the company expects to be operating cars on seven miles of the new structure by July, 1901.

Forty-four miles of State roads were laid out during 1900, making a total of 310 miles of road now in the charge of the State Highway Commission. During the past eight years 350 miles of stone roads have been built by municipalities, and at the end of 1900 there were stone roads in 110 cities and towns, exclusive of those built by the commonwealth.

Banks.—On October 31, 1900, there were 246 national banks in operation and 46 in liquidation. The active capital aggregated \$78,602,500; circulation outstanding, \$31,675,073; deposits, \$283,209,501; and reserve held, \$2,740,356. The loan and trust companies, June 30, 1900, numbered 34, and had capital, \$11,375,000; deposits, \$105,674,935, and resources, \$128,296,908; and mutual savings banks, 186, with 1,491,143 (estimated) depositors; deposits, \$533,845,790, and resources, \$568,674,400. The bank clearings at Boston, Springfield, Worcester, Lowell, New Bedford, and Fall River all show a slight decrease for the year; the total exchanges at the clearing houses of the six cities for the year ending September 30, 1900, were \$6,528,137,706, and the total decrease from the preceding fiscal year was \$530,123,103.

Finances.—The gross State debt for 1900 is divided into two classes: (a) actual State debt, for which the entire State is liable; (b) the contingent debt, to be paid by certain cities and towns. The total actual State debt at the close of 1900 was \$26,996,423, applicable to which there were sinking funds aggregating \$15,292,257, leaving the net actual State debt \$11,704,166, over \$500,000 less than in the preceding year. The total contingent debt was \$39,143,412. Sinking funds applicable to the contingent debt amounted to \$2,931,147; net contingent debt, \$36,212,265, of which sum \$34,652,265 was to be paid by the cities and towns in the metropolitan water, parks, and sewerage districts.

Education.—The estimated school population in 1899 was 627,000; enrolment in public schools, 471,977; average daily attendance, 360,317. There were 13,402 teachers, the school revenue and expenditures were \$13,889,838, of which about \$7,932,850 was for teachers' and superintendents' salaries. The average expenditure per pupil for the whole school year was \$38.55. There were 232 public high schools, with 1402 teachers and 34,425 students; 101 private secondary schools, with 665 teachers and 5554 students; 10 public normal schools, with 122 teachers and 1421 students in normal courses; and 3 private normal schools, with 25 teachers and 159 students in normal courses. Nine colleges and universities for men and for both sexes reported 513 professors and instructors, 5058 preparatory, collegiate, and graduate students, and a total income of \$1,840,978; 3 schools of technology reported 214 professors and instructors, 1547 collegiate and graduate students, and a total income of \$471,576; and 5 colleges and seminaries for women reported 327 professors and instructors, 2735 preparatory, collegiate, and graduate students, and a total income of \$683,123. The professional schools comprised 8 theological schools, with

69 instructors and 464 students; 2 law schools, with 46 instructors and 965 students; and 4 medical schools, with 199 instructors and 1073 students.

Militia.—The Massachusetts Volunteer Militia consists of 38 staff officers, 246 men in the cavalry troops, 1027 artillery and 3874 infantry. The total number of men authorized is 6592, and the State appropriation amounts to \$323,000. The organized force is exceeded only in the States of New York, Pennsylvania, and Illinois, and the militia appropriation is exceeded only in the two first named.

Insurance.—The following table gives comparative statistics of fire and life insurance in Massachusetts for 1899 and 1900:

Items.	Fire Insurance.		Life Insurance.	
	1899.	1900.	1899.	1900.
Risks written.....	\$1,187,500,192	\$1,287,122,186	\$109,047,134	\$103,983,425
Premiums received....	11,457,578	12,349,362	18,697,876	20,397,520
Losses incurred.....	5,715,845	5,176,046	8,104,230	8,906,919

Under "Fire Insurance" it will be observed that while the risks written and premiums received for 1900 both show an increase over those items for 1899, the losses incurred were considerably less in 1900 than in the preceding year. "Life Insurance" shows a decrease in amounts written for 1900, but a gain in premiums received and in losses incurred.

Population.—According to the United States census, the population in 1890 was 2,238,943; in 1900, 2,805,346; increase for the decade, 566,403, or 25.2 per cent. Boston is the largest city in the State and the fifth largest in the United States, and the population in 1900 was 560,892. Next to Boston, the four largest cities in the State, with population in 1900, are: Worcester, 118,421; Fall River, 104,863; Lowell, 94,969; and Cambridge, 91,886.

Legislature.—The governor of Massachusetts, W. Murray Crane, both in his inauguration address and in his message to the Legislature in January, 1900, insisted that Massachusetts had "reached a limit of indebtedness beyond which she should not go." He advocated rigid economy in appropriations and expenditures, and a cessation of those special acts of the Legislature by which cities were authorized to "assume financial burdens which are prohibited by general laws. A wiser policy would be to compel them to live within their means," except in case of extraordinary emergency. The governor especially noted the advisability of incurring no further indebtedness in the Boston "Metropolitan District," in whose suburban territory large sums had already been laid out for parks, water, drainage, and sanitation. When, therefore, the Legislature authorized the additional expenditure of nearly \$1,000,000 in this district for parkways and driveways, the governor remarked that "the ease with which great financial burdens are imposed or assumed is a tendency of the times which, in my opinion, needs to be checked," and vetoed the bills. Other bills of a similar nature receiving legislative approval permitted Boston to incur debt for a municipal building, parks, school-houses and play-grounds. These the governor also vetoed, recalling to the Legislature that a recent law increasing the debt limit of Boston had been mainly passed in order to avoid *ex cathedra* authorizations by the State, and that the bills were in opposition to his recommendation that the Legislature should not interfere in local affairs. But besides vetoing large expenditure bills—and every one of his vetoes was sustained—the governor was stated to be largely instrumental in obtaining for the State an added revenue of \$150,000 per annum. At the beginning of the year the State held 50,000 shares of the common stock of the Fitchburg Railroad Company. The par value of this stock was \$5,000,000, but as it was not anticipated that dividends would be paid upon it in the near future, it was not even "carried on the State treasurer's books as an asset." When the Fitchburg and Boston & Maine railroads sought the sanction of the Legislature to the lease of the former to the latter road, the governor insisted that a clause be inserted in the legislative bill of lease providing that the governor and council should receive "in full payment" of the Fitchburg stock held by the Commonwealth Boston & Maine 3 per cent. 50-year gold bonds to the amount par value of \$5,000,000.

On July 17 an act was approved authorizing the lease of the Boston & Albany Railroad to the New York Central & Hudson River Railroad Company. This act was passed as the formal consent of Massachusetts to the contract and lease entered into on November 15, 1899, between the directors of the two railroads and later approved by their respective stockholders. The main conditions under which the commonwealth ratified the lease were as follows:

1. The commonwealth reserved all its legal rights in and over the Boston & Albany, including the right to reduce rates and fares, to compel service and to impose restrictions.
2. The New York Central during the term of the lease was prohibited in the case of freight brought to the State or taken from the State from charging higher rates

from any point of origin to Boston, or from Boston to any point, than what was charged for carrying the same freight from the same point to the port of New York, or from New York to the same point. Provided, however, that these provisions should not conflict with any act of Congress.

3. The New York Central was forbidden to diminish the facilities for travel and business over the Boston & Albany below the standard of service as shown in the present quality and equipment of its cars, the construction of its stations and the provisions made for the security of the public.

4. The New York Central engaged to expend \$2,500,000, at a yearly rate of not less than \$250,000, beginning June 1, 1901, in extending, enlarging, and developing the terminal facilities of the Boston & Albany Railroad in East Boston, and in perfecting the railroad approaches to the property in East Boston which the State had taken over for the purpose of constructing wharves and docks.

5. The New York Central, as lessee of the Boston & Albany, was made subject to all the laws affecting railroads incorporated in Massachusetts. Violation of the conditions under which the State gave its assent to the lease would constitute cause for trial before the Supreme Judicial Court of Massachusetts, and failure to obey the decision of the court would be warrant for the annulment of the lease.

By an act approved June 26 the amount of money which, outside of the city debt, Boston was permitted to raise for municipal purposes, was fixed at \$10.50 on every \$1000 of taxable property, and any appropriation requiring a larger assessment was declared to be void.

By an act, to go into effect on July 1, 1900, the Legislature provided that children under 16, dependent upon charity or living under morally undesirable conditions, should be given into the custody of the State Board of Public Charity. These children should remain in the custody of the board until they became of age, and the board should, so far as practicable, place them out in private families.

By an act, approved June 13, the Legislature extended the law of 1895 which forbade minors under 18, or women, to work in mechanical or manufacturing establishments more than 58 hours every week. The amendment provided that this law should be extended to cover work done in mercantile establishments except in retail stores during December. The law of 1899 providing that 8 hours should constitute a day's work for laborers or mechanics employed by any city or town, if such city or town so voted, was amended to make it obligatory upon cities to put the matter to vote upon the petition of 100 voters, and of towns upon the petition of 25 voters.

The market provided by a law of 1898 for goods produced by convict labor was increased by an act, approved April 26, 1900, prescribing that prison-made goods should be used in all city public institutions supported by appropriations of city money.

By an act going into effect on April 17, 1900, the Legislature provided for a retirement fund for the teachers in the Boston public schools. The fund was to be made up by bequests and by deductions from every teacher's salary. The Board of Trustees to manage and disburse this fund was to consist of the superintendent of public schools, four members of the school committee, and six teachers elected by popular vote at teachers' meetings held for that purpose. The fund was not expected to be largely drawn upon except by teachers who had contributed thereto.

A resolution was adopted by the House on February 6 and by the Senate on February 9 requesting Congress to appropriate money to widen and deepen the channel of Boston Harbor in order to facilitate the shipping of that port and aid the commerce of the New England States.

A veto by the governor, important in its moral effect, was that of a "special" bill intended to legalize the action of a syndicate who had erected a building ninety-six feet high by Copley Square. By a legislative act of 1898, "the height of any building to be erected in certain streets adjacent to Copley Square," was restricted to ninety feet. The syndicate, however, who had completed the plans for their building and were at work upon it when this law was passed, completed it, trusting to a special legislative act to relieve them of the consequences of their action. The governor stated that he would not approve a bill which was "intended to relieve citizens of the commonwealth from the consequences of deliberate disregard of the provisions of a statute," he said, for "the vital point involved is not the appearance of the building or the difficulties under which the owners labor, but it is rather whether law may be violated only to be excused or condoned."

Elections.—In the State election of 1900, 228,054 votes were cast for W. Murray Crane, the Republican nominee for governor, and 130,078 for R. T. Paine, Jr., the Democratic nominee. Mr. Crane's plurality was thus 97,976. The elections resulted in three changes in the State's congressional representation. Charles Q. Tirrell (Rep.) was nominated and elected in place of G. W. Weymouth (Rep.); Joseph A. Conry (Dem.) was nominated and elected in place of John F. Fitzgerald (Dem.); Samuel L. Powers (Rep.) was nominated and elected in place of Charles F.

Sprague (Rep.). The State Legislature in 1899 consisted, in the Senate, of 33 Republicans and 7 Democrats, and in the House of 165 Republicans, 60 Democrats and 9 Independents; in 1901 the Legislature will consist, in the Senate, of 31 Republicans and 9 Democrats, and in the House of 180 Republicans, 58 Democrats and 2 Social-Democrats. In the national election McKinley received 238,866 votes and Bryan 156,997. In 1896 McKinley received 278,976 votes and Bryan 105,711. McKinley's plurality was thus reduced from 173,265 in 1896 to 81,869 in 1900. It was thought that this reduction resulted in large part from the fact that the anti-imperialistic feeling ran high in Massachusetts, and that perhaps the ablest opponents of imperialism, among them Senator Hoar and ex-Governor Boutwell, were resident in that State.

State Officers and National Representatives.—State officers for 1900: Executive—governor, W. M. Crane; lieutenant-governor, J. L. Bates; secretary of state, W. M. Olin; treasurer, E. S. Bradford; auditor, J. W. Kimball; adjutant-general, S. Dalton; attorney-general, H. M. Knowlton; secretary of the Board of Education, F. A. Hill; secretary of the Board of Agriculture, J. W. Stockwell; insurance commissioner, F. L. Cutting—all Republicans.

Supreme Judicial Court for the Commonwealth—Chief justice, O. W. Holmes; justices, M. P. Knowlton, J. M. Morton, John Lathrop, J. M. Barker, J. W. Hammond and W. C. Loring; clerk, H. A. Clapp.

Congressional representatives for 1900 (56th Congress): Republicans—George P. Lawrence (North Adams), F. H. Gillett (Springfield), G. W. Weymouth (Fitchburg), William S. Knox (Lawrence), M. M. Moody (Haverhill), E. W. Roberts (Chelsea), Samuel McCall (Winchester), C. E. Sprague (Brookline), W. C. Lovering (Taunton), and W. S. Greene (Fall River); Democrats—J. R. Thayer (Worcester), J. F. Fitzgerald and H. F. Naphen (Boston).

Senators for 1900 (56th Congress): G. F. Hoar (until 1901) and H. C. Lodge (until 1905)—both Republicans.

State officers for 1901: Executive—same as for 1900, except that H. E. Turner replaces J. W. Kimball as auditor.

Judiciary: Same as for 1900.

Congressional representatives for 1901 (57th Congress): Same as for 1900, except that C. Q. Tirrell (Rep.), from Natick, J. O. Conry (Dem.), from Boston, and S. L. Powers, from Newton, replace respectively G. W. Weymouth, J. F. Fitzgerald, and C. F. Sprague.

Senators for 1901 (57th Congress): H. C. Lodge (until 1905), from Nahant, and G. F. Hoar (until 1907), from Worcester.

MATHEMATICAL SOCIETY, AMERICAN, formed in 1888, reorganized 1894, to encourage and maintain an active interest in mathematical science. Publishes *Transactions* (quarterly) and *Bulletin* (10 months in each year). In 1900 had a membership of 357. President, E. H. Moore; secretary, F. N. Cole, Columbia University, New York City.

MATHER, FREDERICK, pisciculturist, died at Lake Nebagomay, Wis., February 14, 1900. Born in Greenbush (now Rensselaer), N. Y., August 2, 1833, he was educated at the Albany Academy, and then passed several years in hunting and trapping in Wisconsin. He entered the Union service in the Civil War, and rose to the rank of captain. In 1873 he was appointed assistant United States fish commissioner, and from 1883 to 1895 he was superintendent of the New York fish commission. In 1880 he had charge of the American exhibit in the Fisheries Exhibition at Berlin. He became fishing editor of the *Chicago Field* in 1877, and subsequently resigned to accept a similar position on the *New York Forest and Stream*. He retained his connection with the latter paper to the time of his death. Mr. Mather invented a hatching cone for shad and other piscicultural apparatus. Among his writings are: *Fish Culture*; *Ichthyology of the Adirondacks*; *Men I Have Fished With*; and the lectures *Fish and Fisheries and The Army of the Potomac*.

MAURITIUS, a crown colony of Great Britain, is an island 500 miles east of Madagascar, having an area of 705 square miles and a population at the end of 1899 of 379,659, of whom 261,739 were East Indians. The remainder of the inhabitants are chiefly French or of French descent, and the language generally spoken is French. Dependencies of Mauritius are the Seychelles Islands and Rodriguez, Almirante, Oil, St. Brandon, and Diego Garcia islands, the total area of which is about 350 square miles and the population about 20,000. The capital of Mauritius is Port Louis, with a population estimated in 1898 at 54,223. The colony is administered by a governor (Sir Charles Bruce since 1897), who is assisted by an executive council of five officials and two elected members and by a legislative council of twenty-seven members, of whom eight are ex-officio, nine nominated by the governor, and ten elected. Instruction is largely supported by the government, and primary education is free, but not compulsory. In 1898 the enrolment in the government

schools was 9826. Secondary education is provided by the Royal College, with over 400 students, and its 24 affiliated schools, with about 450 students. The total government expenditure for education in 1898 was 486,836 rupees, of which about two-thirds was for primary instruction. Of the school population, about 70 per cent. are Roman Catholics, 3 per cent. Anglicans, somewhat over 1 per cent. belonging to other Christian churches, and about 25 per cent. Hindus and Mohammedans; to the last two classes government assistance is not granted.

The public debt at the end of 1899 was £1,192,184. Other statistics of finance and statistics of commerce in rupees are as follows (the Indian rupee for some time had been worth about 20.8 cents, but in October, 1900, was valued at 32.4 cents):

	Revenue.	Expenditure.	Imports.	Exports.
1897.....	7,996,705	8,626,798	18,948,233	28,192,675
1898.....	7,620,318	8,131,465	24,006,970	27,537,930
1899.....	9,000,000	8,500,000	20,000,000	24,750,000

Though aloe-fibre, vanilla, rum, and cocoanut oil are exported, the only export of account is sugar, which in 1899 amounted to over 23,000,000 rupees. The great increase in the sugar output of late years is largely due to the introduction of improved machinery and to the steady growth in the cultivation of small holdings, chiefly by the Indian inhabitants. Entrances and clearances in foreign shipping in 1897 amounted to 328,708 and 338,638 tons respectively; in 1898, 327,246 and 328,298 tons respectively. There are two lines of railway, with a total length of 105 miles, and 135 miles of telegraph lines. A submarine telegraph line connects Zanzibar with the Seychelles and the latter with Mauritius.

In January, 1899, the bubonic plague appeared in Mauritius, being introduced probably from Madagascar, and during the year there were 1416 cases. Active measures were taken, with ultimate success, but outbreaks are still feared.

The following statistics are for the Seychelles, the principal dependency of Mauritius. The revenue and expenditure in 1899 amounted to 362,701 rupees and 268,907 rupees respectively; and the imports and exports, exclusive of specie, 984,666 rupees and 1,853,362 rupees respectively. The public debt consists of a loan from the imperial treasury (1899) of £20,000 for road-making. Vanilla and cocoanut oil are the most important exports.

MAURY, General DABNEY HERNDON, a Confederate officer in the Civil War, died at Peoria, Ill., January 11, 1900. He was born at Fredericksburg, Va., May 21, 1822, and was educated at the University of Virginia, where he graduated in 1841. He then entered the United States Military Academy at West Point, and, graduating in 1846, served in the Mexican War. He was breveted for gallantry at the battle of Cerro Gordo, where he was severely wounded. After the war he became instructor in literature at West Point, and later was superintendent of cavalry instruction at the Carlisle Barracks. When the Civil War broke out Maury was serving as adjutant-general in New Mexico. He resigned to enter the Confederate service, becoming a colonel and chief-of-staff to General Earl Van Dorn, and after the battle of Pea Ridge was made a brigadier-general for meritorious conduct. At Corinth, where he commanded a division, he was promoted to the rank of major-general. Late in 1864 he took part in the operations around Vicksburg, and subsequently was placed in command of the Department of the Tennessee and then of the Gulf, in which position he participated in the defence of Mobile, where in May, 1865, he was paroled as prisoner of war. In 1868 he organized the Southern Historical Society, and ten years later started the movement for the reorganization of the national militia. During Mr. Cleveland's first administration Maury was United States minister to Colombia. Besides many magazine articles, he wrote: *A System of Tactics in Single Rank*; *Skirmish Drill for Mounted Troops*; *The History of Virginia*; *Recollections of a Virginian*.

MAYFLOWER DESCENDANTS, SOCIETY OF, organized in New York, December 22, 1894, by lineal descendants of the *Mayflower* Pilgrims "to preserve their memory, their records, their history, and all facts relating to them, their ancestors, and their posterity." Every lineal descendant over 18 years of age of any passenger of the voyage of the *Mayflower*, which terminated at Plymouth, Mass., December, 1620, including all signers of "The Compact," are eligible to membership. Initiation fee, \$10; annual dues, \$5. Annual meeting, November 21, the anniversary of the signing of "The Compact." Societies are organized in New York, Massachusetts, Pennsylvania, Connecticut, Ohio, Illinois, New Jersey, and the District of Columbia, with a membership of 2500. The governor of the New York society is John Taylor Terry; secretary, Jeremiah Richards, 83-87 Grand Street. The State societies have formed a national organization, of which Judge Henry E. Howland is governor and Richard Henry Greene secretary-general.

MAYO, WILLIAM KENNON, commodore, U. S. N., retired, died in Washington, D. C., April 9, 1900. Born at Drummondton, Va., May 29, 1829, he was appointed a midshipman in the navy in 1841, and first saw active service in the Mexican War, taking part in the capture of Monterey, Tampico, and Vera Cruz. His promotions were as follows: Lieutenant, 1855; lieutenant-commander, July, 1862; commander, 1866; captain, 1873; commodore, 1882. After the Mexican War he was attached to various ships, most of which were engaged in surveying and other scientific work, and in 1854-57 was instructor in seamanship and tactics at the United States Naval Academy, Annapolis, where in 1859-60 he was assistant professor of ethics. When the Civil War broke out he adhered to the Union, and in consequence the Virginia convention of July, 1861, declared him an alien and enemy, and banished him from the State. In January, 1862, he became executive officer of the steam sloop *Housatonic* in the Charleston blockade, and later in the year was placed in command of the gunboat *Kanawha* on the Western Gulf squadron. He was returned to the Charleston blockade in 1864, and for his services as commander of the monitor *Nahant* was commended by the secretary of the navy. After the war he served at various stations, and in 1882-85 was commandant of the Norfolk Navy Yard. He was retired on his own application in 1886. He wrote the *System of Tactics and Fleet Sailing*, used as a text-book at Annapolis.

MEAT INSPECTION. See **FOOD** and **GERMANY**.

MECHANICAL ENGINEERS, AMERICAN SOCIETY OF, organized 1880, incorporated in 1881, had in 1900 a membership of 2131. General meetings for 1901 at Milwaukee, Wis., date to be announced later, and in New York, December 3-6. The society published in 1900 Vol. XXI. of its *Transactions*. President, Samuel T. Wellman; secretary, F. R. Hutton, 12 West Thirty-first Street, New York City.

MECKLENBURG-SCHWREIN, Duke **HENRY** of. See **NETHERLANDS** (paragraph History).

MEDAL OF HONOR LEGION, an association of officers and enlisted men who were awarded medals of honor in the American Civil War, was organized in 1890, and has an estimated membership of about 500. Commander, George W. Brush, M.D., 2 Spencer Place, Brooklyn, N. Y.; adjutant, Llewellyn G. Estes, Washington, D. C.

MEDICAL ASSOCIATION, AMERICAN, held its fifty-first annual meeting on June 5-8 at Atlantic City, N. J. The membership is now over 10,000. Officers: Dr. C. A. L. Reed, Cincinnati, O., president; Dr. George H. Simmons, 61 Market Street, Chicago, Ill., editor of the association *Journal*, secretary.

MEDICAL PROGRESS IN 1900. The acquisition by the United States of tropical territory has resulted in the importation of diseases formerly unknown here, as well as the transmission of diseases which of late years had not been found in this country. (See **PARASITIC HEMOPTYSIS** and **FILARIA**.) Thorough investigation of such diseases is being prosecuted by microscopists and bacteriologists, as well as of the infectious and contagious diseases which prove so largely fatal where epidemic, with a view to devising treatment which will produce immunity. (See **CHOLERA**; **LEPROSY**; **PLAGUE**; **SERUM THERAPY**; **YELLOW FEVER**.) During the year a notable epidemic of small-pox swept over the United States, due in all cases to laxity in the matter of primary vaccination or neglect and ignorance respecting the necessity of repeated vaccinations during every individual's life. (See **SMALL-POX** and **VACCINATION**.) The war against tuberculosis has been prosecuted constantly, with encouraging results. (See **TUBERCULOSIS** and **SANITATION**.) Corroborative testimony in the case of mosquitoes as a cause of malaria was obtained during 1900 (see **MALARIA** and **ENTOMOLOGY**, paragraph Insects and Disease), and additional instances were noted regarding the rôle of insects in the propagation of diseases. Interesting reports concerning two comparatively new vices have been made by medical men. (See **COCAINE HABIT** and **PETROLEUM DRINKING**.) Several new drugs were exploited and several comparatively new drugs and foods were successfully tested. (See **ACETOPYRIN**; **ADONIDIN**; **BROMOCOLL**; **DORMIOL**; **EPICARIN**; **EUNATROL**; **EUPYRIN**; **FERSAN**; **HYDRAGOGIN**; **LARGIN**, and **SOSON**.) Other medical news and facts will be found under their proper titles. See also **PROGRESS OF THE CENTURY**, Appended.

MEDICO-PSYCHOLOGICAL ASSOCIATION, AMERICAN, founded in 1844 as the Association of Medical Superintendents of American Institutions for the Insane. The object of the society is the study of all subjects pertaining to mental disease. It had in 1900 a membership of 356. Meetings are held and proceedings are published annually. Secretary, C. B. Burr, Flint, Mich.

MENAND, LOUIS, one of the best-known horticulturists of this country, died August 15, 1900. He was born in Burgundy, France, in 1807, and coming to America in 1842, settled near Albany, N. Y. His extensive hothouses, conducted primarily in

the interest of horticultural research, gave him a wide reputation as a florist and botanist. In 1892 he published his *Autobiography and Recollections*.

MENNONITES, a sect of Christians, whose distinctive tenets combine some characteristics of both Baptists and Quakers, organized their first church in America at Germantown, Penn., as early as 1683. The Mennonites, a large proportion of whom are farmers, have gained an enviable reputation for culture and integrity, and for consistent adherence to their ideals of life. A strict discipline has caused many divisions, among which the largest are: (1) Mennonite, with 418 ministers, 288 churches, and 22,443 members; (2) Amish, with 365 ministers, 124 churches, and 13,051 members; (3) Reformed, with 43 ministers, 34 churches, and 1680 members; (4) General Conference, with 138 ministers, 79 churches, and 10,395 members; (5) Bundes Conference, with 41 ministers, 16 churches, and 3050 members; (6) Defenceless, with 20 ministers, 11 churches, and 1176 members; (7) Brethren in Christ, with 45 ministers, 82 churches, and 2953 members.

MENTAL SCIENCE. For a discussion of various aspects of this subject, see the following articles: CHRISTIAN SCIENCE; PSYCHICAL RESEARCH, SOCIETY FOR; PSYCHOLOGICAL ASSOCIATION, AMERICAN; PSYCHOLOGY; PSYCHOLOGY, EXPERIMENTAL, and SYNÆSTHESIA. See also PROGRESS OF THE CENTURY, Appendix.

MERCERIZED COTTON. See COTTON AND THE COTTON INDUSTRY.

MERCURY. The production of mercury in the United States in 1899 amounted to 30,454 flasks, valued at \$1,452,745, and the estimated production for 1900 is 32,315 flasks, valued at \$1,474,533. In the United States most of the output continues to come from California, although during the past year the deposits of Presidio County, Tex., have become of importance, and a small quantity was also produced in Oregon. Among the world's producers, Spain is, perhaps, the most important, although its output is decreasing in value, while much mercury is exported from Austria and Italy.

METABOLIC FEVER. A form of febrile affection common in children during the summer months, and generally termed a bilious attack, has been denominated metabolic fever by Todd White. It is marked by severe frontal headache, profuse perspiration, vomiting, constipation or diarrhoea, loss of appetite, and a temperature reaching 101° or 102°. In White's cases the patient has taken some unusual exercise during the days immediately preceding the attack.

METALLURGY. See IRON AND STEEL; COPPER, and ZINC.

METAMORPHISM. The investigations and theories of Van Hise concerning the behavior of rocks under pressure have been corroborated in a very valuable and interesting way by the experiments upon marble of F. D. Adams and J. T. Nicholson. In this series of experiments cylinders of Carrara marble were used, which had a diameter of one inch and a length of an inch and a half; these were accurately fitted into iron tubes under such conditions as to give perfect contact and to leave an inch and a quarter of the tube free at each end. This was then put into a machine, and by means of steel plungers, which fitted accurately into the iron tube, pressures up to 13,000 atmospheres were brought to bear upon the marble cylinder. The marble was pressed under four conditions—namely, dry, both at ordinary temperatures and at 300° and 400° Centigrade, and in the presence of moisture at 300° Centigrade. The rate of applying the load was also varied, so that the experiment lasted for intervals varying from ten minutes to sixty-four days. At the end of the test the tube and the marble were split in two, and it was found in each case that although both had been deformed by pressure, nevertheless the rock was so firm that a steel wedge was needed to split it. The original rock was crystalline and glistening in appearance, while the deformed rock was a dull white color, similar to chalk. In many instances it was found that the marble after deformation was weaker than the original rock, yet the reverse was the case when the deformation was brought about with extraordinary slowness. A microscopic examination of thin sections of the deformed rock showed that the change of form was due in some instances to the slipping of the minute grains of the rock upon each other or along cleavage planes, but that in other cases the grains of calcite were actually bent. In order to determine whether the deformation was of the same nature as that which had actually taken place in the earth's crust when rocks had been folded, a series of specimens of crushed and folded limestone from districts of metamorphic rocks were carefully compared with the samples used in the experiments, and it was found that the structure developed in the two instances was in many cases very similar.

METEORITES. Prince Kropotkin estimates the number of meteorites annually reaching the earth at 146,000,000, but considers that they are so small in the aggregate bulk that 100,000 years would be required for their dust to form a layer one inch thick over the surface of the globe. E. W. Cohen has published a review of

the literature regarding the structure of various meteoric irons (*Annalen des k. k. naturhist. Hofmuseum*, XIII., p. 473). Preston describes three siderites, one from Luis Lopez, N. Mex., another from Central Missouri, and a third from Illinois Gulch, Mont. Foote notes a meteorite from Iredell, Bosque County, Tex., which fails to show the Widmanstätten figures.

METEOROLOGY. A bulletin has been issued by the United States Weather Bureau at Washington, which contains a chronological record of more than 400 tropical storms, beginning with the one that visited Cuba in May, 1494, and ending with the disastrous hurricane that destroyed Galveston, Tex. (see TEXAS, paragraph Galveston disaster), September 8, 1900. The latter is, perhaps, the worst storm ever recorded, for it caused the loss of 5000 lives and the destruction of property with an estimated value of \$20,000,000. This hurricane began as a slight disturbance in the Windward Islands of the West Indies during the closing days of August, and moved westerly over the Caribbean Sea until the night of September 4, when it recurved northward over west central Cuba, passing southern Florida, and then making an abnormal curve to the westward, after which it increased in intensity. Its worst effects were, of course, those recorded from Galveston, where the wind reached a velocity of 96 miles an hour, which subsequently became even greater, although, owing to the destruction of the anemometer, it could not be recorded. The effect of this heavy wind was to cause an extraordinarily high tide, which, during the early portion of the night, inundated the entire city to a depth of from 6 to 15 feet, and destroyed much of its southern and eastern portions. From Galveston the disturbance passed northward over Texas, Oklahoma, eastern Kansas, and Iowa, and then eastward over the Great Lakes and St. Lawrence to Newfoundland. The extraordinary violence of the storm in the neighborhood of Galveston is explained as due to the fact that storms are more than ordinarily violent in regions where they recurve or try to recurve abnormally.

The extension of the United States Weather Service which has taken place in the last few years has proved a great success, and a number of stations have been established in the West Indies, with a central bureau at Havana. This service has been made additionally effective by the establishment of relations with the Mexican Meteorological Bureau. During the past year considerable interest has been shown in the possibility of preventing hail-storms by firing cannons. Some of these experiments have been made in Italy, very often with successful results, while others have been carried on in France. It is stated in one instance that in the region about Lyons, France, 52 cannons were distributed over an area of 2500 acres of rich vine land. The cannons were fired at first twice a minute and then after the first ten shots more slowly. That the results of this method are successful is not yet demonstrated.

Volume II. of the report of the chief of the Weather Bureau for 1898-99 contains a valuable report on the international cloud observations. In this report there are discussed methods of making observations and the results that have been thus far obtained. The Weather Bureau has also collected statistics showing that the number of insured buildings destroyed by lightning during 1899 was 2760, with a total loss of \$3,913,525.

During the past years experiments have been continued in kite-flying for the purpose of meteorological observations, and as a result of improvements in apparatus and methods greater heights have been attained. Thus, at Teisserenc de Bort, in France, an altitude of 4300 metres or more was reached, while at the Blue Hill Observatory, in Massachusetts, on July 19, 1900, the height of 4850 metres was attained. A recent work, entitled *Sounding the Ocean of Air*, by A. L. Rotch, is a description of the work carried on at the Blue Hill Observatory during the past six years. The *Monthly Weather Review* for August contains a report on meteorological observations during the fire at the works of the Standard Oil Company at Bayonne, N. J., July 5, 6, and 7, 1900, in which is noted the formation of cumulus clouds over the smoke from the burning oil tanks. It also states that the surface winds were drawn in toward the fire from a distance of over half a mile. W. G. Davis, of the Argentine Meteorological Office, has issued a series of reports on the climate of Argentina.

Sir Charles Todd, government astronomer of South Australia, notes an interesting case of the slow penetration into the ground of the high temperature caused by a hot wave. During February, 1897, the temperature from the 7th to the 18th showed a maximum of 82.6° Fahrenheit on the 7th, and 107.3° on the 10th. On the morning of the 8th the temperature at the Adelaide Observatory was 71.5° at 3-foot depth, 68.6° at 5 feet, and 67.5° at a depth of 8 feet; on the morning of the 10th the readings at the same depths were 73.6°, 69.3°, and 68.46°, showing a slow increase during the intervening period. According to the investigations of Willcocks and Elliot, the latter being the meteorological reporter to the government of India, there seems to be a connection between the amount of the Nile floods and the abundance of the southwest monsoon rainfall in India. The former observer found that the famine

years in India are generally those of low flood in Egypt, and that when the summer supply of water in the Nile had been very low and late that it might easily be followed by a high flood, because the drought in the valley of the White Nile must create a powerful draught from the Indian Ocean or Arabian Sea, these being districts in which the southwest monsoon usually originates.

T. W. Fulton, after experiments on the currents of the North Sea, comes to the conclusion that there seems to be a single great current which passes around the northern end of Scotland, then turns southward along the eastern coast of England to Yorkshire, and then flows eastward to the Danish shore, where it once more turns north, and forms the coastal current of southwestern Norway.

Comparatively few people are aware that there is at Manila a well-equipped observatory, at which the work during the past two years has been actively carried on by the Jesuit Fathers. A recent report issued by this observatory deals with the typhoons of the Philippine Islands.

The *Monthly Weather Review*, issued by the United States Weather Bureau, has during the past year published in each of its numbers a list of the recent papers bearing on meteorology which have appeared in various American and foreign magazines. These lists serve as a valuable bibliography of meteorological literature for that particular year.

A book entitled *Practical Exercises in Elementary Meteorology*, by R. De C. Ward, has appeared in 1900. See EARTHQUAKES.

METEOR PHOTOGRAPHY. See ASTRONOMICAL PROGRESS.

METHODIST CHURCH, FREE, founded 1860 with the avowed purpose of returning to the primitive simplicity of Methodism. The church holds quarterly, district, annual, and general conferences, at which laymen are received on equal terms with ministers. This body, which has increased at a fair rate during the last ten years, now has a membership of 28,588, with 944 ministers and 1123 churches, and is represented by educational and publishing activities. Its headquarters are at Chicago.

METHODIST EPISCOPAL CHURCH, formally organized in the United States at Baltimore in 1784. Though the church at various times has sustained considerable losses by division and secession, it has grown most remarkably, and in point of membership now ranks second to the Roman Catholic Church and first among Protestant bodies. The quadrennial general conference, held at Chicago, May 2-29, 1900, was marked by radical changes in the organic law and discipline of the church: the existing inequality of lay and clerical delegates in the conference was removed; provision was made for the admission of women delegates by substituting in the qualifications for membership *lay member for layman*; and the time limit of pastorates, since 1888 fixed at five years, was abolished. Other notable features were the decision that periodicals must be placed on a paying basis, resulting in the suspension of publication of a number of *Advocates*; the large vote given to a negro candidate for bishop; and the tendency to relax strictness in the matter of amusements, a movement which provoked the stormiest discussions. Four new bishops—J. W. Hamilton, D.D.; D. H. Moore, D.D., LL.D.; E. W. Parker, D.D., and F. W. Warne, D.D., the last two missionary bishops—were elected, making the Episcopal board number 24, including 5 missionary bishops. An increase in adherents during the last year brings the total membership of the church to 2,907,877, with 17,752 ministers and 27,382 churches, owning property with a probable value of \$126,273,871, exclusive of parsonages. The Sunday-schools number 32,119, and have 350,271 officers and teachers and 2,700,543 scholars. The various benevolent enterprises are in vigorous working order, and though some report a decrease in the amount of money received, others show a corresponding increase. The Methodist Episcopal Church claims in all 228 educational institutions, with 3040 professors and teachers and 46,545 students; of these, its theological schools, 25 in number, have 100 instructors and 1220 students; its 56 colleges have 1821 professors and 28,619 students.

METHODIST EPISCOPAL CHURCH (SOUTH), founded at Louisville, Ky., in 1845, the result of a bitter controversy in the Methodist Episcopal Church over the slave question. The losses occasioned by the Civil War proved a great setback, but soon after its close the reorganized church regained its prosperity and entered on a rapid growth. Fraternity with the parent body was re-established in 1876, but the two divisions still remain distinct. The church now includes 6041 ministers, 14,244 churches, and 1,457,864 communicants, an increase of 6072 over last year, and a gain of over 20 per cent. in the period of 1890-1900. Like the Northern Methodist Episcopal Church, this organization has a well-developed administrative system for its church activities. It controls several colleges and schools, and maintains a book concern at Nashville, Tenn. The next general conference will meet in 1902.

METHODIST PROTESTANT CHURCH separated from the Methodist Epis-

copal Church after a long controversy on the matter of lay representation, and in 1830 founded a new church at Baltimore. The two branches, created in 1858 by the slavery agitation, were reunited in 1877. The growing tendency toward Christian unity was illustrated at the general conference of the church held at Atlantic City in May, 1900, when a committee to secure a universal Methodist hymnal was given full power to co-operate with other Methodist bodies; the Primitive Methodists and the Central West Association of Congregational Churches made overtures for alliance, and the plea of the first was received with cordial favor. The church carries on mission work at home and supports missionaries in China and Japan; it controls 3 colleges, and has several periodicals. Reports for 1900 assign the denomination 1647 ministers, 2400 churches, and 181,316 members, an increase of 1809 over last year and a gain of 27 per cent. for the last decade.

METROPOLITAN MUSEUM OF ART, New York City, organized 1870, is situated in Central Park, near Fifth Avenue and Eighty-second Street. The thirty-first annual report of the trustees shows an income for the year 1900 of \$152,445.26 and an expenditure of \$146,500.14, of which \$129,407 was for the maintenance of the museum. The number of visitors during the year was 571,500, an increase of nearly 31,500 over that of 1899, and more than 60,000 over the attendance of 1898. There are 2008 paying members, an increase of 35. The new east extension to the great museum building is completed as far as the construction proper is concerned. The equipment of this extension and necessary alterations in the new buildings await the approval of the Park Department and the sale of bonds by the Board of Estimate and Apportionment. The trustees report that since 1879 they have expended over \$90,000 from their own funds in making repairs to the museum buildings, and they have decided that in the future the park commissioners must include in their annual estimates a sum sufficient to keep the museum building in proper repair, or become responsible to the people for its gradual decay. The museum issued 559 permits to copy and sketch works of art during the year. A moulding and cast department will soon be established in order to furnish casts of some of the sculptures in the museum to the various museums, colleges, art schools, and libraries throughout the United States, which are continually applying for them for educational purposes. During the months of January, February, and March lectures were delivered at the museum in co-operation with Columbia University, and were largely attended. The donations received during the year were numerous and valuable. Among bequests, not yet received are the collection of paintings of the late Collis P. Huntington, and \$5000 from the late Henry Villard. A collection of clocks were received from the estate of the late Professor Thomas Egleston, of Columbia University. Three oil paintings were received from J. Pierpont Morgan: "Portrait of Christopher Columbus," by Sebastiano del Piombo, "Lord Nelson on the Victory," by C. Lucy, and "Napoleon at St. Helena," by B. R. Haydon; also a collection of classical Greek art objects in gold, dating from between 400 and 300 B.C. The collection of loaned Mexican antiquities, on exhibition for the past two years, has been purchased by the museum. At the close of 1900 the library numbered 5865 bound volumes, 161 portfolios, and 646 miscellaneous unbound volumes and pamphlets. President, Henry G. Marquand; secretary and director, L. P. di Cesnola.

MEXICO, a Spanish-American republic extending from the United States to Central America. The capital is the City of Mexico.

Area and Population.—The republic comprises 27 states, 2 territories, and a federal district, with a total area of 767,005 square miles, and a population, according to the census of 1895, of 12,619,949. About one-fifth of the inhabitants are whites (chiefly of Spanish descent), somewhat more than two-fifths are of mixed race, and the remainder are Indians. Only a small part of the last two classes are regarded as civilized. According to the revised census of 1895, as reported in 1900 in a publication of the Bureau of the American Republics, the populations of the principal cities are: Mexico, 329,774; Puebla, 88,684; Guadalajara, 83,934 (100,311 in August, 1900); San Luis Potosi, 69,050; Leon, 58,426; Monterey, 45,695; Pachuca, 40,487; Zacatecas, 39,912; Guanajuato, 39,404; Mérida, 36,935 (in 1900, 55,000); Querétaro, 34,576; Morelia, 33,890; Oaxaca, 32,437; Orizaba, 31,512; Aguascalientes, 30,872; Saltillo, 26,801; Durango, 26,425; Vera Cruz, 24,085; Toluca, 23,150; Acanceh, 22,916; Celaya, 21,245; Zopatlanejo, 20,270. A new census of the republic was taken in October, 1900; the total population was shown to be 13,570,544, and the population of the city of Mexico, 356,738. Other details of the census are not yet available.

Government.—By the constitution the federal government comprises three branches—executive, legislative, and judicial. The chief executive authority is vested in a president, chosen for a term of four years, through the medium of an electoral college. He is assisted by a cabinet of seven members. The president in 1900 was General Porfirio Díaz. The legislative power devolves upon a congress consisting of a senate and a house of representatives, members of the former being elected by

popular vote for four years, to the number of two for each state and federal district, and of the latter for two years, also by popular vote, in the proportion of one representative for each 40,000 inhabitants or fraction thereof over 20,000. The number of representatives in 1897 was 227. The several states have their own constitutions and statutes, and elect their governors and legislatures.

Besides inferior courts there are 32 district courts, 3 circuit courts, and the Supreme Court of Justice. The last named is composed of 11 justices (*ministros*), 4 alternate justices, an attorney-general, and a public prosecutor. They are elected for six years by popular vote.

Under the successive administrations of General Porfirio Díaz, Mexico, compared with other Latin-American states, has made remarkable progress, political, industrial, and social. General Díaz became provisional president in 1876; he was then elected for the term ending in 1880. Four years later he was re-elected, and he has been returned as chief executive at every presidential election since that time, though in 1896 he wished to retire from public life. In February, 1900, he was elected president for a sixth term by a large majority, and was inaugurated on December 1. It was thought in some quarters that his desire to withdraw from state affairs was one cause for his appointment of General Bernado Reyes as minister of war, who, it was suggested, would probably to a great extent be permitted to perform the executive duties, and thus be the logical candidate for the presidency in 1904.

Army and Navy.—According to an unofficial report published in *The Two Republics*, of Mexico City, the personnel of the regular army in 1900 was: Major-generals, 8; brigadier-generals, 53; commissioned officers, 944; non-commissioned officers, 2481; privates, 27,247; total, 30,733. Over two-thirds of this number are infantry. The war footing is reported at 151,500 men. All able-bodied citizens between 20 and 50 years of age are liable for military service. According to an official report in 1899 the composition of the navy, which is only in its inception, is as follows: One first-class gunboat, 2 second-class gunboats, 1 transport ship; 2 lighthouse tenders, 1 corvette and 1 steel cruiser, used as a training-ship, the *Zaragoza*. These vessels are all small, the largest—the *Zaragoza*—having only 1200 tons displacement and 1300 horse-power. It was built at Havre in 1891. Several gunboats and torpedo boats are under construction, and a battle-ship and a cruiser are projected. The complement of the navy is 90 officers and 500 men.

Finance.—The condition of Mexican finance, unlike that of most of the Latin-American states, appears to be satisfactory. Revenue is derived chiefly from internal taxation and customs, and the largest items of expenditures are for the departments of war and marine, finance (principally public debt and pensions), and public works. The revenue and expenditure in Mexican dollars (the Mexican dollar being worth 49 cents in United States money on October 1, 1900) have been as follows for fiscal years:

	1896.	1897.	1898.	1899.	1900.
Revenue.....	50,521,470	51,500,629	52,697,948	60,139,212	64,261,076
Expenditure.....	45,070,123	48,330,505	51,815,286	53,499,541	57,944,688

Estimates for the fiscal year 1901 are: Revenue, 58,234,000 dollars; expenditure, 58,009,082 dollars; for the fiscal year 1902: revenue, 61,694,000 dollars; expenditures, 61,577,990 dollars. In 1899 the foreign public debt amounted to £22,700,000 (\$110,458,200 United States money) at 5 per cent. The internal debt was reported in 1900 to be about 114,543,000 dollars, including a floating debt of some 954,000 dollars.

The value of silver and gold coinage, in Mexican dollars, has been reported for fiscal years as follows:

	1896.	1897.	1898.	1900.
Silver.....	22,634,788	19,296,009	21,427,057	21,066,443
Gold.....	565,786	453,474	459,219	599,442

Large numbers of Mexican silver dollars are continually sent to the Orient—particularly China, the Philippines, and the Straits Settlements—where they are either used in their original form or melted for other coinage. (See the paragraph Commerce.) The monetary standard is silver, the value of the silver dollar, or peso, being estimated on October 1, 1900, by the director of the United States mint at 49 cents. In 1885 the dollar was valued in United States currency at 86.4 cents and in 1890 at 92.3 cents. Except bank-notes Mexico has no paper currency.

Industries.—The leading industries of Mexico are agriculture and mining, but the condition of both is capable of great development. The climate and soil are suited to many products of both the temperate and the sub-tropical zones, yet agriculture, especially the cultivation of crops that are native to colder countries but are readily grown in Mexico, is not in a flourishing condition, and farming methods for the

most part are primitive. Advancement, however, is being made, and business in 1899 and 1900 was prosperous; indeed, it was said in 1900 that "Mexico in the past nine years has doubled its revenues, doubled its exports, doubled the number of its factories, and multiplied by three its banking capital." The principal products include corn, wheat, woods, sugar, cotton, henequen fibre, coffee, barley, chick-peas, tobacco, brandies, dye plants, rice, peas, gums and resins, rum, and cacao; excepting the henequen, woods, dyes, and coffee, these products are largely used in domestic consumption. In comparison with the size of the country and the suitability of its climate and soil, Mexico's sugar production is very small, the output of refined sugar in the year 1898-99 being about 50,670 metric tons, and of raw sugar about 150,000 metric tons; of the latter fully one-half was distilled into spirits. Rice culture is increasing, the production in 1893 amounting to 10,250 metric tons, and in 1898, 21,000 metric tons. The state of Morelos is the largest producer of both rice and sugar. Tobacco culture is also on the increase; the three foremost tobacco-producing districts are San Andres-Tuxtla, Acayucan, in Vera Cruz, and Tuxtepec, in Oaxaca. One of the most valuable and most promising products is the henequen, or sisal, fibre of Yucatan. The production of henequen has increased from less than 100,000 arrobas (the arroba is about 11½ kilogrammes) to 3,500,000 arrobas as the average during the period 1884-89, and to more than 6,000,000 arrobas in 1899, valued at over 18,250,000 dollars. Even greater in this year was the export, the amount sent from Progreso, the Yucatan port, being reported at 73,190,896 kilogrammes, valued at 20,711,000 dollars. In 1899 not only production, but, on account of the falling off in the export of Manila hemp, prices greatly advanced, the export in 1892 of 57,500,000 kilogrammes being valued at 8,000,000 dollars. Of the total henequen export, about 90 per cent. goes to the United States. There are said to be in Yucatan some 300 plantations devoted to henequen cultivation, with a total area of 35,000 hectares (nearly 86,500 acres), on which 16,000 laborers are employed. Agriculture is encouraged by the Mexican government, which makes liberal offers of the public lands to settlers and colonization companies; in 1899 grants for about 241,000 hectares of these lands were made.

Mexico has valuable deposits of gold, silver, copper, iron, lead, mercury, tin, zinc, cobalt, antimony, sulphur, coal, and petroleum; mining, however, except in the case of gold, silver, and latterly of copper, has not been developed to any considerable extent. This in large part is due to the present difficulties of transportation. In 1899 the mining properties in Mexico, of which about one-third are said to belong to foreigners, were reported to number 8299, divided among 20 classes, as follows: Silver, 4024; gold and silver, 1675; silver and lead, 1035; gold, 828; copper, 173; silver and copper, 156; iron, 99; mercury, 95; gold and copper, 54; silver and iron, 42; copper and iron, 22; sulphur, 20; lead, 19; antimony, 19; opal, 13; tin, 8; lead and iron, 7; copper and lead, 6; silver and magnesia, 2; rock salt, 2. By the beginning of 1900 the total number of mining properties had risen to 9594; the states having the greatest number of these are, in the order of their importance, Durango, Sonora, and Chihuahua. Gold and especially silver have been mined for many years, and recently considerable activity has been shown in the exploitation of copper, the output of this metal in the fiscal year 1900 being 100 per cent. greater than that for the preceding twelvemonth. The total value of mineral products for the fiscal year 1899 was reported to be 131,964,000 dollars.

Manufacturing industries, which are comparatively unimportant, are concerned largely with brandy and sugar; in 1900 there were in operation in the republic 134 cotton mills, of which 27 were in the state of Puebla and 14 in the Federal District. The principal metallurgical works are at San Luis Potosí, Monterey, and Durango.

Commerce.—The leading exports include silver, coffee, henequen, gold, copper, woods, cattle, hides and skins, and tobacco; among the principal imports are iron, machinery, and other metallic wares, cotton and woollen textiles, provisions, alcoholic beverages, chemical and pharmaceutical materials, and paper goods. The following figures, representing Mexican gold (the gold dollar being worth 98.3 in United States money) for the imports and Mexican silver for the exports, are for the foreign trade during fiscal years ending June 30:

	1897.	1898.	1899.	1900.
Imports.....	42,204,095	43,603,492	50,860,194	61,304,914
Exports.....	111,346,494	128,972,749	138,478,137	149,992,925

In the last-named year the exports of mineral products amounted to 85,257,851 dollars, a loss, as compared with 1899, of 1,252,896 dollars; vegetable products, 50,885,734 dollars, a gain of 10,514,073 dollars, and animal products, 10,607,763 dollars, a gain of 1,402,635 dollars; manufactured products, 2,819,814 dollars, a gain of 204,046 dollars. In 1899 silver exports in dollars were approximately: Ores, 13,000,000; bullion, 34,000,000; coin, 15,000,000. The slight falling off in the export

of mineral products, noted above, is regarded as temporary. The exportation of copper has greatly increased, the exports for the fiscal year 1900 amounting in value to nearly 10,000,000 dollars. For the preceding year the value of the coffee export was reported at 18,711,325 dollars; henequen, 20,711,000 dollars; tobacco, 3,410,306 dollars.

About three-fourths of the exports go to the United States and one-half of the imports come from that country. The value in Mexican silver of the total export to the United States in the fiscal year 1899 was 103,553,486 dollars; in 1900, 116,098,456 dollars; the exports to Cuba for the same years were 5,258,084 dollars and 5,882,129 dollars respectively. Exports for the last two fiscal years to other countries of trade importance were as follows:

	Great Britain.	France.	Germany.	Belgium.	Spain.
1899.....	14,094,978	6,252,293	4,020,307	2,577,688	1,172,948
1900.....	12,414,733	6,637,815	5,051,187	1,926,103	912,173

The value in Mexican gold of imports from the United States to Mexico in the fiscal year 1899 was 24,164,689 dollars; in 1900, 31,020,136 dollars. The values in gold dollars of imports from other commercially important countries were:

	Great Britain.	France.	Germany.	Belgium.	Spain.
1899.....	9,211,221	5,917,167	5,677,925	707,408	2,969,936
1900.....	10,479,512	6,754,015	6,678,393	801,156	2,918,323

For a number of years Mexican silver dollars have been exported for the use of other nations, especially China, the Philippines, and the Straits Settlements. In 1900 this movement became so pronounced that it "not only drained the republic of its medium of exchange, but caused a rise in the price of silver," and the director of the Mexican mint is reported to have said that the production of Mexican silver is not commensurate with the increasing demand. This demand is due not only to the shipments of coin to the Orient, but to the increased industrial enterprise in Mexico, which requires silver coin for wages and expenses.

In 1898 there entered the ports of the republic 10,527 vessels engaged in the foreign and coasting trade, and aggregating 4,085,200 tons, while there were cleared 10,452 vessels of 3,880,940 tons. In 1900 the merchant marine was reported to consist of 266 vessels of 17,046 tons, there being 41 steam vessels, of 10,314 tons and 225 sailing craft of 6732 tons.

Communications.—With the exception of about 400 miles, the Mexican railways are owned by the government. In 1898 the railway lines aggregated 7750 miles in length; the total length in September, 1899, was 13,369 kilometres (8307 miles), and in September, 1900, 14,573 kilometres (9055 miles). For railway mileage Mexico stands third among the Latin-American countries, Argentina and Brazil ranking first and second respectively. In the fiscal year 1899 the Mexican railroads carried 31,005,094 passengers and 6,018,724 tons of freight; and in 1898 the railway earnings amounted to 30,930,000 dollars, and in 1899, 35,791,000 dollars. The post-offices, including postal agencies, number about 2500, and the telegraph offices about 900. The total earnings of the post-office department in the fiscal year 1900 were 970,000 dollars. The length of telegraph line in the fall of 1900 was reported at 68,250 kilometres (42,408 miles).

Religion and Education.—The prevailing faith is Roman Catholicism, but there is no state church; landed property cannot be acquired by ecclesiastical bodies, and toleration of all forms of faith prevails. In the City of Mexico the proportion of Catholics to Protestants is more than 100 to 1. The law establishing compulsory primary instruction is for the most part merely nominal; and, as is usually the case in Latin-American countries, education is not far advanced. Primary instruction, which is free, and is directed principally by the states and municipalities, is aided by grants from the federal government, and many other schools are under private control or the care of charitable organizations. There are also secondary schools and seminaries under control of the clergy. Excepting the students in institutions for higher education, the total number of enrolled pupils in 1897 has been reported at 669,560, the average attendance being about 463,000, and the total number of schools 10,298. There are a number of colleges and other institutions for higher education, in some of which are offered courses in law, medicine, civil and mining engineering, agriculture, commerce, art, and music. The students attending the schools for higher education are said to number about 21,000. Besides a number of museums, etc., there were in 1898, 102 public libraries in addition to the national library of 159,000 volumes in the City of Mexico. In 1900 the reported number of periodicals and newspapers published was 525, of which the City of Mexico had 153. Almost all of these publications are in Spanish.

The Yaqui Rebellion.—During the second half of 1899 the Yaqui Indians of the state of Sonora were in rebellion against the Mexican government on account of their unwillingness to tolerate the settlement of whites upon their lands. Inter-mittent fighting up to the end of the year brought varying success to both sides. The government believed that the battle of Macoyate on January 18, 1900, in which the Yaquis were defeated and suffered a loss of 200 in killed, including Chief Tetabiate, and 500 prisoners, while the loss of the government troops in killed and wounded was about 80, would mark the end of the insurrection; but the Indians, after obtaining a Maxim gun from Arizona, were enabled to oppose the Mexicans on February 23 at Potam in an unusually severe engagement, and were defeated only after inflicting a loss of 227 men upon the government force. The Yaquis were further defeated in four engagements near Cocori between March 6 and 9, but they were by no means subdued. Although no engagements so serious as these were reported up to the close of the year, many raids and skirmishes took place, and in December the insurrection did not appear to be finally suppressed, for about the middle of the month a small body of troops under Colonel Francisco Peinado, who is second in command to General Torres in Sonora, was attacked by the Yaquis. Colonel Peinado was seriously wounded, and five Mexican officers and a number of soldiers killed, but the Indians were put to flight.

Archæological Discoveries.—The Spanish City of Mexico was built upon the ruins of the old Aztec city in some such way as Italian Rome was placed above Latin Rome. The light Mexican soil has engulfed and covered the native ruins, and it has long been known that the present great cathedral in the City of Mexico is built above or nearly above the ancient temple of the Aztecs. It was thought that systematic excavations, which had never been made, would probably ensue from a discovery in the autumn of 1900 made by workmen engaged in the construction of a sewer in Escalilleras Street, near the rear of the cathedral. It was reported that at the depth of twenty-five feet two chapels were found, which were regarded as two of the seventy-eight that surrounded the Aztec temple at the time of the Spanish conquest. So important did the find appear to be that President Diaz asked the government for an appropriation of 200,000 dollars for continuing the investigations. Among the antiquities found in the two chapels, which were supposed to be those of Fnecatl, god of air, and Teomyique, goddess of death, were flint knives and spear-heads, skulls perforated at the top with small holes, skillfully engraved idols, ornamented with gold, and a quantity of jade beads. The jade recalls the theory of early communication between Mexico and China. Other finds include various trinkets and implements, temple bells, a section of the famous Wall of Serpents, and an elaborately carved stone altar, said to be one of the altars of Tzompantli, upon which human beings were sacrificed to the god Tezcatlipoca. Though the excavations had not progressed far at the end of the year, they promised to be of much archæological value. Popular interest was aroused in the hope that the explorers would find the lost treasure of Montezuma, which, disappearing at the time of the Spanish conquest, many have supposed was concealed in the Aztec temple, and which, accordingly, now lies beneath the Roman Catholic cathedral.

Pan-American Conference.—In 1900 the several Latin-American republics accepted the proposal of the United States government to hold a conference in 1900, similar to that of 1889 at Washington. The proposed conference, it was suggested, should be held in some other city; and, accordingly, the Mexican government issued invitations to the other American republics that they send delegates to meet in the City of Mexico in October, 1901. These invitations were accepted.

Other Events of 1900.—An insurrection occurred during the year among the Indians of Yucatan, and, government troops were sent to quell the disturbance. Measures were taken for the irrigation from rivers of many tracts of arid lands, and during 1900 contracts were signed providing for the utilization of the following waters: Lake Chapala and the Santiago River, in the state of Jalisco; the Lerma and Duero rivers, in Michoacán; the Cuantla River, in Morelos; the Fuerte River Valley, in the Sinaloa; the Blanco River, in Vera Cruz, and the Cantarranas River, in Puebla. At the beginning of the year a tunnel of two kilometres and a canal of thirty kilometres in length were completed for the irrigation of the arid region about San Diego, in the state Coahuila. Several rivers in Tabasco are being improved for navigation, and a contract was made for the construction of a canal in that state between the rivers Grijalva and Gonzales, the work to be completed in March, 1902. On March 17, 1900, the great drainage canal, fifty kilometres in length, with a tunnel through the mountains, was formally opened; this canal was built to drain the valley of Mexico and carry off the sewage of the city. Improvements to the harbors of Manzanillo, Mazatlán, Salina Cruz, and Coatzacoalcos are being made, and in April a contract for a new steel wharf at Tampico, to cost 1,000,000 dollars, was signed. A new capitol building in the city of Mexico is being erected at a cost of over 1,000,000 dollars. For a month, beginning January 20, 1900, there

was held at Léon an exposition of the mining and manufacturing industries of the states of Chihuahua, Coahuila, Michoacán, Nuevo Leon, Jalisco, San Luis Potosí, and Querétaro. At the close of the year a scientific congress was held in the City of Mexico. On May 17, 1900, a series of severe earthquake shocks severely damaged a number of towns in the states Jalisco and Colima.

MICA. The production of mica in the United States in 1899 amounted to 108,570 pounds of sheet mica, valued at \$70,587, and 1505 short tons of scrap mica, valued at \$30,878. This was a decrease from 1898, and was due to increased importations. These in 1899 amounted to 1,777,132 pounds, valued at \$275,984. The use of mica as an insulating material in electrical work is now very great, and constantly increasing.

MICHIGAN, a lake State of the United States, has an area of 58,915 square miles. The capital is Lansing. Michigan was organized as a Territory June 30, 1805, and admitted as a State January 26, 1837.

Mineralogy.—In 1899 Michigan continued to hold first place among the States as a producer of iron ore. The output for that year, 9,146,157 tons, was 37.1 per cent. of the total for the United States, and shows an increase of 1,799,311 tons, or 24.5 per cent. over the production of 1898. Of the product for 1899, 8,863,942 tons (96.9 per cent. of the whole) was red hematite; 237,570 tons magnetite, and 44,645 tons brown hematite. The total value of the ore mined in 1899 was \$13,707,899. In 1900 the shipments of iron ore from the three principal Michigan ports aggregated only 6,616,082 tons, showing a marked decrease in production, which in connection with a large increase in the output of the Minnesota mines, has transferred the first rank in iron-ore production to that State.

The output of the copper mines of the upper peninsula is indicated by the shipments passing through the Sault Ste. Marie canals. In 1899 these amounted to 120,090 tons, and in 1900 to 131,066 tons. The recently opened coal-fields in the lower peninsula continue to develop. The production in 1899 was 624,908 short tons, spot value, \$870,152, an increase of 98 per cent. over the output for the preceding year. During the year the number of coal mines was increased from 17 to 23. The value of quarry products for 1899 was: Sandstone, \$320,192, and limestone, \$371,210. Salt mining in 1900 yielded 4,820,865 barrels, an increase over 1899 of 5416 barrels.

Agriculture.—The following shows the production and value of the principal crops cultivated during 1900: Corn, 38,888,460 bushels, \$14,388,730; wheat, 9,271,764 bushels, \$6,397,517; oats, 33,689,536 bushels, \$8,759,279; barley, 904,806 bushels, \$425,259; rye, 1,041,068 bushels, \$499,713; buckwheat, 310,240 bushels, \$158,222; potatoes, 16,630,941 bushels, \$4,324,025, and hay, 1,727,617 tons, \$16,325,981. Michigan ranked second among the States in quantity of potatoes produced, but the price per bushel (26 cents) was the lowest paid for the potatoes of any State, in consequence of which Michigan held only eighth rank in value of product. The wool clip for 1900 was estimated as follows: Number of sheep, 1,340,456; wool, washed and unwashed, 8,981,055 pounds; wool, scoured, 4,310,906 pounds.

Manufactures.—The lumber output of the Northwest has shown a steady decline for the last few years, but Michigan continues to hold first position among the lumber-producing States, and the industry is still one of great magnitude. The production in 1900 was: Pine lumber, 1,134,481,000 feet; hemlock lumber, 732,269,000 feet; hardwood lumber, 512,201,000 feet; total, 2,293,052,000 feet. This was 41,000,000 feet more than in the previous year; but was far short of the maximum production of 1888, when the production amounted to 3,292,190,000 feet. The output of shingles in 1900 was 1,155,728,000, a falling off of 289,000,000, as compared with the previous year. The decline is most notable in the production of pine lumber, especially in the lower peninsula; but there are vast quantities of hemlock and hardwood timber yet available in both peninsulas.

Michigan ranks second among the States in beet-sugar production. In 1899 there were 9 factories, with \$2,850,000 capital, which employed 1340 persons when running at full capacity, and could utilize 3975 tons of beets per 24 hours. In 1900 the number of factories had increased to 10, with a combined capacity of 4250 tons of beets per day; and at the close of the year 2 new factories, with a total daily capacity of 1200 tons of beets, were building. A canvass of nearly 5000 factories of all kinds in the State showed that 545 had increased their capital \$6,531,884 during 1899, and that 1382 factories employed 24,262 more persons in 1899 than in the preceding year. Seventy-four per cent. of the factories reported an increase of business over 1898.

In 1899 there were 1240 cigar factories and 115 tobacco factories in operation, and their combined production was 164,576,350 cigars and 15,129,215 pounds of tobacco. During the fiscal year ended June 30, 1900, the production of fermented liquors was 907,156 barrels; rectified spirits, 321,981 gallons, and distilled spirits, 597,193 gallons. There were 80 creameries and 60 cheese factories in the State. In 1899 the production of pig iron was 134,443 long tons, and in 1900, 163,712 tons. During the year ended March 1, 1900, there were 300,100 hogs packed and marketed at Detroit.

Foreign Commerce.—During the fiscal year ended June 30, 1900, the imports of merchandise at the ports of Detroit, Huron, Michigan, Superior, and Grand Rapids aggregated in value \$5,556,054; export, \$32,590,586. The only trade in gold and silver was at Detroit, where the imports amounted to \$602, and the exports to \$108,841, making the total foreign trade \$38,256,683, an increase for the year of \$4,407,433. Nearly all of the increase was in exports of merchandise. The following shows the number and tonnage of vessels engaged in the foreign trade entered and cleared at Detroit during the fiscal year: Entered, 1552, of 240,802 tons; cleared, 1482, of 223,716 tons.

Transportation.—The new railway construction for the calendar year 1900 aggregated 141.85 miles, giving the State a total mileage of 8240.02. The total freight tonnage passing through the canals at Saulte Ste. Marie during 1900 was 25,643,073 tons, an increase over 1899 of 2 per cent.

Banks.—On October 31, 1900, there were 85 national banks in operation and 89 in liquidation, and the active capital aggregated \$11,570,000; circulation outstanding, \$5,741,378; deposits, \$61,174,664, and reserve held, \$16,917,240. The State banks June 30, 1900, numbered 194, and had capital, \$12,945,100; deposits, \$102,448,609, and resources, \$124,820,305; and private banks, 48, with capital, \$617,603; deposits, \$3,442,350, and resources, \$4,259,131. The exchanges at the clearing houses at Detroit, Grand Rapids, and Kalamazoo in the year ended September 30, 1900, aggregated \$507,653,704, an increase of \$49,332,434 in a year.

Finances.—The assessed valuation of real estate for 1900 was \$1,006,453,013, an increase over the preceding year of \$180,594,302; personal property, \$310,997,015, an increase over 1899 of \$168,666,639; total assessed valuations for 1900, \$1,317,450,028. The large increase is due to the work of the new tax commission. The tax rate was reduced from \$21.17 per \$1000 in 1899 to \$15.47 per \$1000 in 1900. On July 1, 1900, the bonded debt of the State amounted to \$434,500 in war loan bonds, for the full payment of which provision had been made. On the same date the amount of cash in the treasury and in the hands of institution treasurers aggregated \$2,667,023.

Education.—The school population in 1899 was 713,740; enrolment in public schools, 498,665; average daily attendance about 350,000. There were 15,564 teachers, 7973 buildings used as school-houses, and public school property valued at \$19,746,443. The school revenue was \$6,660,800, and expenditures, \$5,883,369, of which \$4,312,245 was for teachers' and superintendents' salaries. The average expenditure per pupil for the whole school year was \$16.81. There were 286 public high schools, with 997 teachers and 27,146 secondary students; 23 private secondary schools, with 126 teachers and 1192 secondary students; 3 public normal schools, with 77 teachers and 1199 students in normal courses, and 3 private normal schools, with 9 teachers and 524 students in normal courses. Nine colleges and universities for men and for both sexes reported 224 professors and instructors, 3170 preparatory, collegiate, and graduate students, and a total income of \$611,781; and 2 schools of technology reported 62 professors and instructors, 1 graduate, and 644 collegiate students, and a total income of \$165,519. The professional schools comprised 4 theological schools, with 13 instructors and 109 students; 2 law schools, with 14 instructors and 766 students; and 6 medical schools, with 191 instructors and 1044 students.

Population.—According to the United States census, the population in 1890 was 2,093,889; in 1900, 2,420,982; increase for the decade, 327,093, or 15.6 per cent. The five largest cities, with population in 1900, are: Detroit, 285,704; Grand Rapids, 87,565; Saginaw, 42,345; Bay City, 27,628, and Jackson, 25,180.

Legislation.—An act was approved on January 8 supplementing an act approved on June 21, 1899, by which provision was made for the relief of sick, disabled, and needy ex-soldiers and marines of the Spanish-American War. The supplementary act authorized the auditor-general to pay out upon properly approved claims of such persons not more than \$40,000. In case this sum was not sufficient to satisfy all the claims allowed by the act of 1899, the auditor-general was directed to reduce all the claims proportionately.

An act was approved on January 5 amending an act passed on June 15, by which the city of Grand Rapids was authorized upon the approval of a majority of electors in that city to borrow money to the extent of \$100,000 for the construction of a bridge to cross Grand River from Bridge Street in that city. By the amendatory act the city was authorized to appropriate \$150,000, instead of \$100,000.

An act was approved on January 8 authorizing the city of Ionia to borrow \$30,000 and to issue bonds therefor for the purpose of retiring and redeeming the same amount of water bonds issued by the city in 1883.

An act was approved on January 8 authorizing the township of Springwells, in Wayne County, to issue bonds to the extent of \$20,000, bearing not more than 4 per cent. interest, for the purpose of paying the outstanding indebtedness of the city

and to pay the township share of the cost of constructing a bridge over the Rouge River.

A joint resolution was approved on January 8 empowering the attorney-general to bring action for the recovery of moneys which, it was alleged, had been lost to the State through fraud, both in the sale made by the military board in 1899 of military goods belonging to the State, and in the subsequent purchase of military goods by the board for the use of the National Guard.

Elections.—At the State elections in 1900 Aaron T. Bliss, the Republican candidate for governor, received 305,606 votes, and William C. Maybury, the Democratic candidate, 226,228 votes. The Republican candidate had thus a plurality of 79,384. The 12 Republican representatives of Michigan in the 56th Congress were returned to the 57th Congress, with the exception that A. B. Darragh (Rep.) was nominated and elected in place of William S. Mesick (Rep.). The Legislature in 1900 consisted, in the Senate, of 27 Republicans and 5 Democrats, and in the House of 92 Republicans and 8 Democrats. In 1901 the Legislature will consist, in the Senate, of 31 Republicans and 1 Democrat, and in the House of 90 Republicans and 10 Democrats. In the election of 1900 the vote on the proposed amendment to the constitution in reference to the taxation of railroad, telephone, telegraph, and other corporations was 422,728 for the amendment, and 54,757 against it. The amendment was, therefore, adopted. In the national election 316,269 votes were cast for McKinley, and 211,685 for Bryan. In 1896 McKinley received 293,582 votes, and Bryan, 236,714. McKinley's plurality was, therefore, increased from 56,868 to 104,584.

State Officers and National Representatives.—State officers for 1900: Executive—governor, Hazen S. Pingree; lieutenant-governor, O. W. Robinson; secretary of state, Justus S. Stearns; treasurer, George A. Steel; auditor, Roscoe D. Dix; attorney-general, H. M. Oren; superintendent of public instruction, J. E. Hammond; insurance commissioner, H. H. Stevens—all Republicans.

Supreme Court: Chief justice, R. M. Montgomery; justices, F. A. Hooker, J. B. Moore, C. D. Long, Claudius B. Grant; clerk, C. C. Hopkins—all Republicans.

State officers for 1901: Executive—governor, A. T. Bliss; lieutenant-governor, O. W. Robinson; secretary of state, F. W. Warner; treasurer, D. McCoy; auditor, P. F. Powers; attorney-general, H. M. Oren; superintendent of education, Delos Fall; commissioner of state land office, A. E. Wildey—all Republicans.

Supreme Court: Same as for 1900.

Congressional representatives for 1900 (56th Congress): J. B. Corliss (Detroit), H. C. Smith (Adrian), W. Gardner (Albion), E. L. Hamilton (Niles), W. A. Smith (Grand Rapids), S. W. Smith (Pontiac), Edgar Weeks (Mt. Clemens), J. W. Fordney (Saginaw), R. P. Bishop (Ludington), R. O. Crump (West Bay City), William S. Mesick (Mancelona), C. D. Shelden (Houghton)—all Republicans.

Congressional representatives for 1901 (57th Congress): Same as for 1901, except that A. B. Darragh (Houghton) (Rep.) replaces W. S. Mesick.

Senators for 1900 (56th Congress): Jas. McMillan (until 1901), of Detroit, and Julius C. Burrows (until 1905), of Kalamazoo—both Republicans.

Senators for 1901 (57th Congress): Julius C. Burrows; one vacancy.

MICHIGAN, UNIVERSITY OF, Ann Arbor, Mich., was founded in 1837. Recent appropriations by the Michigan Legislature have made possible the construction of some much-needed buildings and preparations for the organization of new departments. During the college year 1899-1900 a new hospital for the Homœopathic Medical College was added, and a residence was purchased, which will be used as a nurses' home. The year also witnessed the completion of the Barbour gymnasium for women. The principal donor was the Hon. L. L. Barbour, of Detroit. A small addition was made to the building of the general library, and contracts were awarded for enlarging the building devoted to engineering. The campus, which now comprises about 40 acres, was enlarged by the purchase early in 1900 of a valuable lot opposite the site selected for the new science building, soon to be erected. A course in marine architecture for the preparation of men for the important work of designing vessels for service on the Great Lakes has been established. New special courses were provided during the year in higher commercial education and in public administration by a co-ordination of courses in history, political economy, and law, and special lecturers appointed to discuss matters of foreign and domestic industrial interest. An important change was made in the requirements for admission to the academic department (granting the degrees of B.A., B.L., and B.S.) in the direction of greater flexibility. The only fixed requirements for admission are preparation in English, mathematics, and physics. The remaining subjects, which call in the aggregate for a little more than the amount of study bestowed on those three branches, being elective. In the graduate department the degrees of M.Ph. and M.L. have been abolished, and the degree of M.A. will be conferred on all bachelors who may

earn a master's degree, though if any of these have pursued their studies along scientific lines, they may at their option receive the degree of M.S. Increased requirements in the law department, beginning with the year 1900-01, demand the same preparation as for one of the three courses of the academic department—namely, the completion of a good high-school course or its equivalent. The same action was taken in reference to the dental college, beginning with 1901-02, when the course will be lengthened to 4 years. The increase of the library for the year 1899-1900 was 12,273 volumes, bringing up the total number of books to 145,479. The number of professors and instructors was 158, and of students, excepting 404 in the summer session, 3303. The distribution follows: Graduate students, 113; academic department, 1253; engineering, 273; medicine and surgery, 471; law, 816; pharmacy, 71; homœopathic medical, 65; dental surgery, 247. Of the 41 graduate students granted degrees, 4 received the degree of Ph.D. The income for the year was \$555,623.90.

MICROBE LIGHT. Raphael Dubois, a Parisian chemist, claims to have invented a new light. He has discovered a method of propagating phosphorescent microbes in glass vessels which radiate light resembling moonlight. He promises to devise means to control its intensity, and claims a scientific value for it.

MICROSCOPICAL SOCIETY, AMERICAN, for the encouragement of microscopical research, was organized in 1878, and incorporated in 1891. In 1900 the society had 350 members, and published Vol. XXI. of its *Transactions*. General meeting for 1901, in Denver, August 29-31. President, C. H. Eigenmann; secretary, Henry B. Ward, Lincoln, Neb.

MILITARY ACADEMY, UNITED STATES, at West Point, N. Y., opened 1802, reorganized 1812. There were on duty at West Point on September 1, 1900, a total of 74 officers and instructors and 429 cadets, the largest number ever belonging to the academy at one time. The act of June 6, 1900, made a material increase in the number of cadets authorized for the Academy, the maximum number allowable now being 481, as against 381 in 1899. There was one cadet each from Costa Rica, Venezuela, and Ecuador receiving instruction at his own expense under special authority of Congress. During the year 30 cadets were discharged for deficiency in studies, 1 for deficiency in discipline, and 1 for physical disability; 2 were dismissed and 7 resigned, and 54 were graduated on June 13. In 1900 Congress repealed the statute which, since 1812, has fixed the mental requirements for entrance to the military academy. These requirements are now placed under the control of the secretary of war. By the statute of 1812 it was prescribed that candidates must be "well versed in reading, writing, and arithmetic." These are the requirements to-day, the only change in 87 years being the addition of an elementary knowledge of English grammar, United States history, and geography, subjects generally finished in the elementary schools of the country. By placing the requirements for admission under the control of the secretary of war these admission requirements may now be maintained in harmony with the standards of preparation which the public schools of the country establish, and are brought into the same category as the studies of the academic curriculum itself—namely, under the direction of the War Department—thus securing greater flexibility and more readily permitting the modifications which time makes necessary. It will also permit the best adjustment between the academy's requirements for admission and the very rigorous studies the cadet must pursue before he is fit to be an officer. While the entrance conditions have been fixed for years, the curriculum has gradually grown to include studies which are advanced and difficult. To quote the report of the superintendent, "The government does so much for a cadet after his admission it should reasonably and in justice to itself require him to come up to public school standards before admitting him to the academy." Material progress at West Point during the year included various improvements to grounds, the enlargement and further beautifying of the post cemetery, the pursuance of the work of renovating the library building, and additions to the hospital. During the year a fine building was erected, to be used as a chapel for the Catholic students. The Cullum Memorial Hall was dedicated on June 12. Among improvements recommended are additional barrack room for the cadets, the increase of water supply by the purchase of Long Pond in the mountains back of West Point, and the renovation of the West Point Hotel, a building erected over seventy years ago from funds procured from the sale of timber on the reservation. The considerable increase in the number of cadets will soon render imperative an enlargement of the academy's present plant. A comprehensive plan of improvements has been adopted, and it is hoped that Congress will make the necessary appropriations for carrying it out, and avoid the frequent practice in the past of temporary makeshifts and inadequate construction—a policy which is destructive to convenience and the

dignity and beauty of the institution as an architectural whole, as well as one wasteful and extravagant in the long run. The superintendent in his report of September 15, 1900, states his belief that the summer has witnessed an absolute ending of the particularly cruel and extreme forms of hazing new cadets which had been referred to in the previous year's report. He reports that hazing has, in its more injurious forms, been voluntarily abandoned by the cadets generally. Toward the close of the year, however, this subject attracted widespread attention, since it was stated in the public press that the death of Oscar L. Booz, of Bristol, Pa., on December 3 from tuberculosis of the throat was due to injuries received from hazing at West Point during the summer of 1898. The matter was investigated by the superintendent, who denied specifically all the charges made, and later by a court of inquiry from the War Department and a committee from Congress. The investigations of the committees were not finished at the end of the year, but the fact was revealed that hazing abuses had existed at the time mentioned, though it was not possible upon the evidence presented to prove that Booz had met his death from the hazing to which he had been subjected.

MILITARY ORDER OF FOREIGN WARS was organized in New York in 1894, the National Commandery in 1896, the membership being composed of veterans or descendants of veterans who served in the Revolutionary War, the War of 1812, the war with Tripoli, the Mexican War, or the war with Spain. Commanderies have been established in New York, Pennsylvania, Connecticut, Illinois, California, Massachusetts, Florida, Maryland, District of Columbia, Ohio, Missouri, Vermont, Virginia, Rhode Island, Louisiana, Indiana, New Jersey, and Wisconsin. Total membership, about 14,000; *National Register*, 1900, issued. The officers of the general commandery are: Commander-general, General A. S. Webb; secretary-general, James H. Morgan, St. Paul Building, New York City.

MILK SUPPLY. See **FOOD** and **SANITATION**.

MILLERAND, ALEXANDRE, French minister of commerce, was born in Paris on February 10, 1859, studied law, and commenced practice in his native city in 1881. He quickly gained a reputation as an eloquent pleader, and in 1882 became famous through his splendid defence of the miners of Montceau-les-Mines. From that time he has continued the champion of the rights of working men in France. He was elected in 1884 to the municipal council of Paris, and the following year was sent to the Chamber of Deputies. Joining the extreme Left, he became an ardent opponent of General Boulanger, whom he attacked in the Chamber and in the columns of the *Vaix*, which he edited. Re-elected in 1889, he pleaded in Parliament the cause of the striking miners of Cannaux and elsewhere, standing as a firm advocate of social reform and paternal legislation in favor of the laboring classes. In the reorganization of parties that followed the Panama scandal, Millerand founded the Socialist Union, became editor of its organ, *La Petite République*, and leader of the Socialists in Parliament. As chief exponent of opportunist socialism, he formulated in 1896 the programme of the party, which included the peaceful conquest of the public powers, the nationalization of all means of production, and the international union of workingmen. When Waldeck-Rousseau built his broad-bottomed ministry in June, 1899, Millerand became minister of commerce. The entrance of one of their comrades into a *bourgeoisie* cabinet caused great dissension among the Socialists of France, and threatened for a time to break up the party. In 1900 the case of Millerand was the chief question taken up by the National Congress of Socialists. In his official capacity Millerand has attempted to carry out the ideas he formerly advocated. As arbitrator between employees and employers he has settled a number of important strikes, and by legislation and decree he has sought to further the growth of labor unions and the introduction of compulsory arbitration. As minister of commerce Millerand was the administrative head of the 1900 Exposition. See **FRANCE**; **PARIS EXPOSITION**; **SOCIALISM**.

MILNE-EDWARDS, ALPHONSE, prominent French naturalist, died in Paris April 21, 1900. He was the son of the celebrated scientist Henri Milne-Edwards, and was born in Paris, October 13, 1835. After graduating in medicine in 1859, he became his father's assistant at the Musée, accepted a professorship in the School of Pharmacy in 1865, and in 1876 succeeded his father as professor of zoology in the Musée, of which in 1891 he was made director. In 1880 he was a member of the deep-sea expeditions of the *Travailleur* and *Talisman* in the Mediterranean Sea and eastern Atlantic Ocean. His publications include: *Recherches Anatomiques, Zoologiques et Paléontologiques sur la Famille des Chevrotains* (1864); *Histoire des Crustacés Podophthalmes Fossiles* (1865); *Recherches Anatomiques et Paléontologiques pour servir à l'Histoire des Oiseaux Fossiles de la France* (1866-72, 2 vols.); *Recherches sur la Faune Ornithologique Eteinte des Iles Mascareignes*

et de Madagascar (1866-73); *Éléments de l'Histoire Naturelle des Animaux* (1881-82, 2 vols.); *Expéditions Scientifiques du Travailleur et du Talisman* (1888). He also worked upon the articles on mammals and birds in the great work of Alfred Grandidiers on Madagascar.

MILNER, Sir ALFRED, K.C.B., K.C.M.G., governor of Cape Colony and high commissioner for South Africa, was mentioned in 1900 as the probable administrator of the Vaal River and Orange River colonies. He was born in Germany in 1850, and studied in his native country and later at King's College, London, and at Oxford University. He was admitted to the bar in 1881, but devoted himself to journalism. From 1887 to 1889 he was private secretary to Mr. Goschen, chancellor of the exchequer, and in 1889 became under-secretary of finance in Egypt. In this office he displayed great ability, and gathered information on which he based his *England in Egypt* (1892), the most authoritative work on the subject. In 1892 he was made chairman of the Board of Inland Revenue, and in 1897 was appointed to his present position. In the negotiations with President Kruger that preceded the outbreak of the Boer War, Sir Alfred played an important part, and it was thought that his uncompromising attitude led to the presentation of Mr. Kruger's ultimatum. His opinions had not changed in 1900, it was said, and he was credited with being opposed to any concessions from the government to the conquered republics.

MINER, HENRY C., theatrical manager, died February 22, 1900, in New York City. He was born there in 1842. He served as a pharmacist with the Union forces in the Civil War, and then turned successively to various occupations until he finally became a theatre manager and owner. He owned or managed at different times eight theatres in or near New York City. For one term he was a member of Congress.

MINERALOGY. G. Flink has described the following new species from Greenland: Cordylite, Ancykite, Spodiophyllite, Tainiolite, Lorenzenite, Leucosphenite, Narsarsukite, Chalcolamprite, Endiolite, Epistolite, Britholite, and Schizolite. Other new species are Mullerite, Melite, Robellazite, Cubosilicite, Florencite, Graftonite, and Johnsonite. Among the new publications are: *A Treatise on Crystallography*, by W. J. Lewis; Volume I., Part V., of Hintze's *Handbuch der Mineralogie*; *Tabellen zur Bestimmung der Mineralien mittels äussere Kennzeichen*, by A. Weisbach.

MINERAL PAINTS. The production of mineral paints in 1899 in the United States was as follows:

	Production, Short Tons.	Imports, Value.
Ochre	14,124	\$140,168
Umber	473	4,151
Sienna	588	8,205
Metallic paint.....	23,423	249,945
Mortar color.....	5,736	65,156
Venetian red.....	11,991	210,361
Zinc white.....	40,146	3,211,680
Soapstone	100	700
Slate	4,676	43,703
Other colors.....	2,000	6,000
Total.....	103,257	\$3,940,069

Under mineral paints are embraced those mineral substances which are mixed and used as pigments. The list includes iron ores, ferruginous earths or clays, such as ochre, umber, sienna; barytes or heavy spar; slate or shale, soapstone, asbestos, graphite, gypsum.

In addition to these substances, there are several partly artificial products which should be grouped under this head—namely, Venetian red, obtained from iron sulphate by roasting; zinc white, made by volatilization of zinc ore in retorts.

MINERAL WATERS. The United States Geological Survey Report shows a list of 541 springs in 1899, the largest ever published. The total production was 39,562,136 gallons, valued at \$6,948,030. This is an increase over 1898 of 10,708,672 gallons, but a decrease in value of \$1,103,803. The imports of both natural and artificial mineral waters in 1899 was 2,383,410 gallons, valued at \$663,803.

MINING. The United States Geological Survey issued in 1900 the following statistics covering the years 1898 and 1899:

Products.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
Metallic.				
Pig iron (spot value <i>a</i>).....long tons (<i>b</i>)	(<i>c</i>) 11,773,984	\$116,587,000	(<i>c</i>) 13,620,708	\$345,172,654
Silver, coining value (<i>d</i>).....troy ounces..	54,488,000	(<i>d</i>) 70,894,485	54,764,500	(<i>d</i>) 70,806,685
Gold, coining value (<i>e</i>).....do.	3,118,398	64,463,000	3,437,310	71,053,400
Copper, value at New York City (<i>f</i>).....pounds.....	536,512,987	61,865,376	585,343,194	104,190,898
Lead, value at New York City.....short tons (<i>g</i>)	282,000	16,650,000	309,240	18,831,800
Zinc, value at New York City.....do.	115,399	10,835,910	119,408	13,731,230
Quicksilver, value at San Francisco.....flasks (<i>h</i>).....	81,092	1,188,627	80,454	1,453,745
Aluminum, value at Pittsburg.....pounds.....	(<i>i</i>) 5,900,000	1,716,000	(<i>i</i>) 5,900,000	1,716,000
Antimony, value at San Francisco.....short tons.....	(<i>j</i>) 1,130	184,050	(<i>j</i>) 1,275	351,575
Nickel, value at Philadelphia (<i>k</i>).....pounds.....	13,411	4,694	22,541	8,586
Tin.....do.	(None)	(None)	.....	.....
Platinum, value (crude) San Francisco, troy ounces...	225	1,913	300	1,800
Total value of metallic products.....	.....	\$243,400,955	.....	\$527,218,084
Nonmetallic (Spot Values <i>a</i>).				
Fuels:				
Bituminous coal (<i>l</i>).....short tons.....	166,592,023	132,586,313	193,321,967	167,935,304
Pennsylvania anthracite.....long tons.....	47,668,076	75,414,537	53,944,647	86,143,130
Natural gas.....	.....	15,296,813	.....	20,694,573
Petroleum.....barrels (<i>m</i>).....	55,364,233	44,193,359	57,070,850	64,003,304
Structural materials:				
Brick clay (<i>n</i>).....	.....	9,000,000	.....	11,350,000
Cement.....barrels (<i>o</i>).....	13,111,308	9,859,501	14,311,407	14,417,023
Stone (<i>p</i>).....	.....	30,607,364	.....	44,736,576
Abrasive materials:				
Corundum and emery.....short tons.....	4,064	275,064	4,900	150,000
Garnet for abrasive purposes.....do.	2,967	86,850	2,765	98,325
Grindstones.....	.....	489,769	.....	675,536
Infusorial earth and Tripoli.....short tons.....	2,733	16,691	4,634	37,032
Millstones.....	.....	25,934	.....	33,115
Oilstones, etc.....pounds.....	.....	180,738	.....	203,383
Chemical materials:				
Borax.....pounds.....	16,000,000	1,120,000	40,714,000	1,139,682
Bromine.....do.	486,979	126,614	433,004	108,351
Fluorspar.....short tons.....	7,675	68,050	15,900	96,650
Gypsum.....do.	291,638	755,380	479,335	1,267,080
Marls.....do.	60,000	30,000	60,000	30,000
Phosphate rock.....long tons.....	1,308,885	3,453,460	1,515,708	5,064,075
Pyrite.....do.	193,364	593,801	174,734	543,940
Salt.....barrels (<i>q</i>).....	17,612,634	6,212,554	18,356,503	7,509,184
Sulphur.....short tons.....	1,900	32,960	4,830	107,600
Pigments:				
Barytes (crude).....short tons.....	31,306	103,329	41,864	130,585
Cobalt oxide.....pounds.....	7,848	11,772	10,230	18,512
Mineral paints.....short tons (<i>r</i>).....	58,850	684,856	63,111	723,359
Zinc white.....do.	33,000	2,310,000	40,146	2,311,000

(a) By "spot" value is meant value at the point of production.

(b) Long tons are tons of 2,240 avoirdupois pounds; short tons are tons of 2,000 avoirdupois pounds.

(c) Iron ore, 1892: 16,296,666 long tons; value at mines, \$32,904,896. 1893: 11,587,629 long tons; value at mines, \$19,265,073. 1894: 11,879,679 long tons; value at mines, \$13,577,335. 1895: 15,967,614 long tons; value at mines, \$18,219,684. 1896: 16,005,449 long tons; value at mines, \$32,788,009. 1897: 17,518,046 long tons; value at mines, \$18,963,221. 1898: 19,433,716 long tons; value at mines, \$24,060,887. 1899: 24,663,173 long tons; value at mines, \$34,999,077.

(d) Figures of production furnished by the Bureau of the Mint, Treasury Department. Coining value, \$1.2929 per troy ounce. Commercial value 1895: \$36,445,000; 1896, \$39,655,000; 1897, \$32,316,000; 1898, \$32,118,630; 1899, \$32,858,700.

(e) Figures of production furnished by the Bureau of the Mint, Treasury Department. Coining value, \$30.6718 per troy ounce.

(f) Including copper made from imported pyrites.

(g) The product from domestic ores only.

(h) Of 76½ avoirdupois pounds net.

(i) Including aluminum alloys.

(j) Includes antimony smelted from imported ores, in 1899, 83 per cent.

(k) Including nickel in copper-nickel alloy, and in exported ore and matte.

(l) Including brown coal and lignite, and anthracite mined elsewhere than in Pennsylvania.

(m) Of 43 gallons.

(n) Estimated from Census returns. Value of clay products in 1894: \$64,575,385; 1895, \$65,319,806; 1896, \$63,110,408; 1897, \$63,359,991; 1898, \$71,597,380.

(o) Of 300 pounds for natural cement, and 400 pounds for artificial Portland.

(p) Not including limestone for iron flux, or grindstones.

(q) Of 220 pounds net. The reduced price in 1893 is due to omitting cost of packages.

(r) Including metallic paints, ochre, umber, venetian red, sienna, ground soapstone, ground slate, and mineral black.

PRODUCTS.	1898.		1899.	
	Quantity.	Value.	Quantity.	Value.
<i>Nonmetallic (Spot Values a).</i>				
Miscellaneous:				
Asbestos.....short tons....	605	10,300	681	11,740
Asphaltum.....do.....	76,337	675,649	75,065	553,904
Bauxite.....long tons....	25,149	73,437	35,390	123,596
Chromic iron ore.....do.....	(None)	(None)	(None)	(None)
Clay (all other than brick).....do.....		1,000,000		1,250,000
Feldspar.....do.....	12,000	32,395	27,302	228,545
Fibrous talc.....short tons....	54,356	411,430	54,655	438,150
Flint.....long tons....	19,130	42,670	37,862	231,345
Fuller's earth.....short tons....	14,800	106,500	12,811	79,644
Graphite.....pounds.....	Crystalline, lbs. 2,350,000 Amorphous, tons. } 890	75,900	Crystalline, lbs. 2,900,732 Amorphous, tons. } 2,394	167,106
Limestone for iron flux.....long tons....	5,275,819	2,638,000	6,707,435	4,695,205
Magnesite.....short tons....	1,363	19,075	1,360	18,480
Manganese ore.....long tons....	15,957	129,185	9,935	62,273
Mica.....pounds.....	Sheet, lbs. 129,530 Scrap, tons. } 3,999	108,534	Sheet, lbs. 108,570 Scrap, tons. } 1,505	70,587
Mineral waters.....gallons sold..	28,853,464	8,061,833	39,562,136	6,948,080
Monasite.....pounds.....	250,776	13,543	360,000	20,000
Ozocerite, refined.....pounds.....	(None)	(None)	(None)	(None)
Precious stones.....		160,920		185,770
Pumice stone.....short tons....	600	13,300	400	10,000
Rutile.....pounds.....	140	700	220	1,030
Soapstone.....short tons....	22,221	267,112	24,765	320,805
Total value of nonmetallic mineral products..		\$353,419,765		\$447,790,862
Total value of metallic products.....		343,400,965		527,218,064
Estimated value of mineral products unspecified (a).....		1,000,000		1,000,000
Grand total.....		\$697,820,730		\$976,008,946

(a) Including building sand, glass sand, iron ore used as flux in lead smelting, tin ore, nitrate of soda, carbonate of soda, sulphate of soda, and alum clays used by paper manufacturers.

See ALUMINUM; ANTIMONY; COPPER; GOLD; MERCURY; NICKEL; PLATINUM; SILVER; TIN, and ZINC.

MINING ENGINEERS, AMERICAN INSTITUTE OF, organized 1871, had in 1900 a membership of nearly 2800. President, James Douglas, New York; secretary, R. W. Raymond, 99 John Street, New York.

MINNESOTA, a northwestern State of the United States, has an area of 83,365 square miles. The capital is St. Paul. Minnesota was organized as a Territory March 3, 1849, and admitted as a State May 11, 1858.

Mineralogy.—In consequence of increased activity in the vast ore reserves in the Mesaba range, Minnesota took first place in the production of iron ore in 1900. The shipments from three Minnesota ports aggregated 9,419,179 tons, all from the Mesaba and Vermilion ranges. In 1899 Minnesota held second place with a production of 8,161,289 long tons of ore, all of the red hematite variety, the value of which was \$9,924,853. The increase over 1898 was 2,197,780 long tons, or 36.9 per cent. Quarrying in 1899 yielded granite to the value of \$159,459; sandstone, \$294,615, and limestone, \$496,462.

Agriculture.—The following shows the production and value of the principal crops cultivated during 1900: Corn, 31,794,708 bushels, \$9,220,465; wheat, 51,509,252 bushels, \$32,450,829; oats, 41,907,046 bushels, \$10,057,691; barley, 7,275,251 bushels, \$2,764,595; rye, 1,036,444 bushels, \$435,306; buckwheat, 143,460 bushels, \$81,772; potatoes, 8,636,058 bushels, \$2,590,817; hay, 1,423,344 tons, \$9,892,241. Minnesota held second rank in the production of American wheat, although the crop was nearly 17,000,000 bushels less than in 1899. Returns from the local tax assessors showed that the live stock in 1900 comprised 571,154 horses, mules, and asses, 1,184,794 cattle, and 399,702 hogs. The *Bulletin* of the National Association of Wool Manufacturers estimated the wool clip of 1900 as follows: Number of sheep, 409,157; wool, washed and unwashed, 2,761,809 pounds; wool, scoured, 1,242,814 pounds.

Industries.—The production of white pine lumber, which has been declining gradually for several years, again showed a decrease in 1900. The output of the principal mills was 1,393,980,000 feet, as compared with 1,532,800,000 feet in 1899. The stock on hand December 1, 1900, was 802,028,000 feet. The output of flour at Minneapolis in 1900 was 15,010,725 barrels. One beet-sugar manufactory has a capacity of 350 tons of beets per day, and the total production for the year ended July 31, 1900, was

1,947,200 pounds of sugar, as against 1,994,700 pounds in the preceding year. The hogs packed and marketed at St. Paul during the year ended March 1, 1900, numbered 394,093. Five hundred and thirty-seven manufacturers of cigars and 70 of tobacco reported a combined output for the calendar year 1899 of 57,059,059 cigars, 5000 cigarettes, and 112,982 pounds of tobacco, most of which was smoking. The total amount of spirits rectified during the fiscal year ended June 30, 1900, was 838,732 gallons; distilled spirits gauged, 1,568,269 gallons, and fermented liquors produced, 706,280 barrels. In 1899 Minnesota and Wisconsin together produced 203,175 long tons of pig iron, and in 1900, 184,794 tons, a decrease of 18,381 long tons in a year.

Commerce.—During the fiscal year ended June 30, 1900, the imports of merchandise at the Duluth and Minnesota districts aggregated in value \$1,677,790; exports, \$4,017,019, a decrease of \$891,734 in the former, and of \$757,018 in the latter. Imports of gold at the Minnesota district aggregated \$41,675, making the total foreign trade \$5,736,484.

Banks.—On October 31, 1900, there were 86 national banks in operation and 41 in liquidation, and the active capital aggregated \$12,749,600; circulation outstanding, \$4,151,961; deposits, \$54,427,979, and reserve held, \$23,080,644. The State banks July 31, 1900, numbered 188, and had capital, \$6,654,800; deposits, \$28,130,738, and resources, \$38,685,212; loan and trust companies, 6, with capital, \$2,236,076; deposits, \$989,203, and resources, \$4,222,299; private banks, 47, with capital, \$656,431; deposits, \$3,221,816, and resources, \$4,257,875; and stock savings banks, 11, with capital, \$100,000; depositors, 51,418; deposits, \$12,066,170, and resources, \$13,574,432. The exchanges at the clearing houses at St. Paul and Minneapolis in the year ended September 30, 1900, aggregated \$731,705,485, an increase of \$72,267,070 in a year.

Railways.—The new railway construction reported for the calendar year 1900 aggregated 251.61 miles, giving the State a total mileage of 7023.32.

Education.—The estimated school population in 1899 was 530,700; enrolment in public schools (1898), 384,063, and average daily attendance, 237,145. There were 11,250 teachers, 7260 buildings used as school-houses, and public school property valued at \$15,187,564. The school revenue was \$5,550,437, and expenditures, \$5,172,110, of which \$3,444,425 was for teachers' and superintendents' salaries. The average expenditure per pupil for the whole school year was \$21.81. There were 112 public high schools, with 496 teachers and 11,864 secondary students; 29 private secondary schools, with 151 teachers and 1510 secondary students; 5 public normal schools, with 75 teachers and 2135 students in normal courses, and 2 private normal schools, with 7 teachers and 55 students in normal courses. Nine colleges and universities for men and for both sexes reported 235 professors and instructors, 2802 preparatory, collegiate, and graduate students, and a total income of \$487,514; and 1 college for women reported 9 professors and instructors, 50 preparatory and collegiate students, and a total income of \$5000. The professional schools comprised 9 theological schools, with 45 instructors and 380 students; 1 law school, with 20 instructors and 448 students, and 3 medical schools, with 103 instructors and 429 students.

Finances.—Receipts at the State treasury for the fiscal year ending July 31, 1900, were \$6,903,296; disbursements, \$6,801,075; balance in treasury, \$2,169,337, as against a balance of \$2,067,116 on July 31, 1899. The total bonded debt on December 20, 1900, was \$1,209,000; \$210,000 of the debt had been called in and cancelled since August 1, 1898, and the entire debt is to be paid within ten years. The total assessed valuation of taxable property in 1899 was \$585,083,328, an increase in a year of \$5,831,198. The State tax levy in 1899 was 1.8 mills; school and university tax levy, 1.23 mills; total levy, 3.03 mills.

Penal Institutions and State Charities.—The following table shows the total cost and per capita cost of the support of the State institutions for the fiscal years ending July 31, 1899, and 1900:

INSTITUTIONS.	YEAR ENDING JULY 31, 1899.		YEAR ENDING JULY 31, 1900.	
	Total cost.	Per capita.	Total cost.	Per capita.
Prison, Stillwater.....	\$97,248.14	\$191.00	\$110,176.44	\$296.00
Training School, Red Wing.....	59,429.69	182.80	68,487.73	173.40
Reformatory, St. Cloud.....	49,819.14	367.80	56,117.80	406.60
Insane hospitals and asylums.....	534,071.04	157.70	599,946.70	164.30
School for the deaf.....	48,790.17	218.08	50,708.01	218.90
School for the blind.....	19,899.92	293.10	20,657.48	256.00
School for feeble minded.....	103,888.87	156.10	118,788.06	164.60
State school, Owatonna.....	38,152.23	159.60	43,335.40	183.20
Soldiers' home.....	52,389.71	212.70	60,160.31	272.70
Totals.....	\$1,002,183.40		\$1,194,194.83	

The total population of all of the above institutions was 5807 in 1899, and 6119 in 1900. The State auditor, in his biennial report issued in 1900, urged upon the Legislature the necessity for the establishment of a board of control for the State institutions similar in character to the boards operating with marked saving of public expenses in Iowa, Kansas, and Wisconsin.

Population.—According to the United States census, the population in 1890 was 1,301,826; in 1900, 1,751,394; increase for the decade, 449,568, or 34.5 per cent. The principal cities, with population in 1900, are Minneapolis, 202,718; St. Paul, 163,065, and Duluth, 52,969.

Primary Election Law.—The Primary Election law, passed by the State Legislature in 1899, went into effect in Hennepin County on September 18, 1900. The law provided that in counties having a population of 200,000 or over candidates for office were to be chosen by popular vote. Any party that cast 10 per cent. of the total number of votes cast at an election was to be declared a "political party" within the meaning of this act and for the purposes of the next succeeding election. On petition of voters equalling or exceeding in number 5 per cent. of the votes cast by a political party at the preceding election for a candidate to any office an elector might become a candidate for the same office and be entitled to have his name placed in its alphabetical order on the official nominating ballot of his party. But voters were restricted in their choice of nominees to the candidates for nomination of one party. The law applied only to Hennepin County, and the principal interest of the primary in September centred in Minneapolis in that county.

Elections.—The State election in 1900 resulted in a victory for S. R. Van Sandt, the Republican nominee for governor. Van Sandt received about 152,000 votes, and his Fusion opponent for re-election, Governor Lind, received about 150,000. The other Republican candidates on the State ticket won by pluralities running up to 50,000. A chief justice of the Supreme Court, Charles M. Start (Rep.), was elected, and also an associate justice, Loren W. Collins (Rep.). The seven Republican representatives of Minnesota in the 56th Congress were returned to the 57th Congress. The Legislature in 1900 consisted, in the Senate, of 43 Republicans, 16 Democrats, 1 Populist, and 1 independent; and in the House of 91 Republicans, 18 Democrats, 8 Populists, and 1 independent. In 1901 the Legislature will consist, in the Senate, of 43 Republicans, 16 Democrats, 3 Populists, and 1 independent; and in the House of 96 Republicans, 21 Democrats, and 2 Populists. On December 6 Governor Lind appointed Charles A. Towne to serve in the United States Senate in place of Cushman K. Davis, deceased, until the Legislature regularly elected his successor in January, 1901. In the national election McKinley received 188,000 votes, and Bryan, 111,000. In 1896 McKinley received 193,000 votes, and Bryan, 139,000. McKinley's plurality thus was increased from 54,000 to 77,000. In view of these figures it is remarkable that the Republican State candidate for governor won by a plurality of 2000 votes only over his fusionist opponent.

State Officers and National Representatives.—State officers for 1900: Executive—governor, John Lind; lieutenant-governor, L. A. Smith; secretary of state, Albert Berg; treasurer, A. T. Koerner; auditor, R. C. Dunn; adjutant-general, G. C. Lambert; commissioner of insurance, J. A. O'Shaughnessy; attorney-general, W. B. Douglas—all Republicans, except Lind and O'Shaughnessy.

Supreme Court—chief justice, C. M. Start (Rep.); associate justices, C. L. Brown (Rep.), J. A. Lovely (Rep.), C. L. Lewis (Rep.), and L. W. Collins (Rep.); clerk, D. F. Reese (Rep.).

Congressional representatives for 1900 (56th Congress): Jas. A. Tawney (Winona), Jas. T. McCleary (Mankato), Joel P. Heatwole (Northfield), F. C. Stevens (St. Paul), Loren Fletcher (Minneapolis), Page Morris (Duluth), and F. M. Eddy (Glenwood)—all Republicans.

Senators for 1900 (56th Congress): Knute Nelson (until 1901) and C. K. Davis (until 1905)—both Republicans.

State officers for 1901: Executive—governor, S. R. Van Sandt; lieutenant-governor, L. A. Smith; secretary of state, P. E. Hanson; treasurer, J. H. Block; auditor, R. C. Dunn; attorney-general, W. R. Douglas. Other officers to be appointed by the governor.

Judiciary: Same as for 1900.

Congressional representatives for 1901 (57th Congress): Same as for 1900.

Senators for 1901 (57th Congress): Knute Nelson (until 1907) and Moses E. Clapp (until 1905) to fill unexpired term of C. K. Davis, deceased.

MINNESOTA, UNIVERSITY OF, Minneapolis, Minn., originally organized 1851, finally reorganized 1868, from which year it dates its beginning. The eleventh biennial report of the State University is almost entirely a record of the work of the technical departments, and of scientific investigations carried on for the State. The latter include the State geological survey, which was finished in 1900 after 28 years of work under Professor N. H. Winchell. The survey led to the discovery of the

large Minnesota iron deposits. The botanical division of the survey is still being prosecuted, and large and valuable collections were added during 1899 and 1900 to the university collection, including 167 varieties of plants new to Minnesota; two important publications were issued, *Minnesota Plant Life* and three parts of *Botanical Studies*, by Professor McMillan. The material now belonging to the botanical survey and department of botany is, according to the statement of the university regents, "the finest botanical establishment in America, and fully equal to any collection of its kind in the world." The university income for 1899-1900 was \$351,842.35. Appropriations aggregating about \$340,000, in addition to the income for educational purposes, are asked for by the regents for the year 1900-01, mainly for buildings. The attendance for the year, excluding duplicated names, and omitting 389 students in the summer school, was 2847, as follows: Graduate department, 177; academic, 936; engineering and mechanic arts, 209; mines, 77; chemistry, 5; agriculture, 503; law, 528; medicine (colleges of medicine, homœopathic medicine, dentistry, and pharmacy), 556. The library numbers 60,000 volumes. The total endowment of the university is about \$2,642,220. See UNIVERSITIES AND COLLEGES.

MISSIONARY ASSOCIATION, AMERICAN, founded in 1846, a society of the Congregational denomination, has done work among the American Indians and the Chinese in America, and in 1899 sent eight teachers to Porto Rico. The association publishes the *American Missionary*. The fifty-fourth annual meeting was held at Springfield, Mass., October 23-25. President, Rev. F. A. Noble, D.D.; corresponding secretaries, Rev. A. F. Beard, D.D., Rev. F. P. Woodbury, D.D., Rev. C. J. Ryder, D.D., Fourth Avenue and Twenty-second Street, New York City.

MISSIONS, PROTESTANT FOREIGN. In the entire history of foreign missions no year has been more prominent than 1900. Seldom has any essentially religious convention aroused interest compared to that elicited by the great Ecumenical Conference in the spring of 1900, and the controversy provoked by the question of missionary responsibility for the anti-foreign riots in China was another noteworthy feature of the year.

The Ecumenical Conference on Foreign Missions, in session April 21 to May 1 in New York City, was the third and greatest of general missionary conferences, the previous two having been held at London, 1878 and 1888. By the presence of so many men pre-eminent in lines of secular activity, the conference gave evidence that missionary work was a power recognized by the world as directed to the attainment of the noblest ideals of civilization. Its organization, it is true, included no representatives from the Roman Catholic Church or from the great Eastern churches, but as far as Protestant Christianity is concerned the conference was distinctively ecumenical or world-embracing both geographically and denominationally. After a great amount of preparation the opening meeting took place on Saturday, April 21, at Carnegie Hall, Hon. Benjamin Harrison, the honorary president of the conference, presiding. Besides the sessions at Carnegie Hall, sectional meetings in near-by churches continued to be held throughout the conference, and were attended by thousands of people. Under the main topic, *The Evangelisation of the Nations*, the conference included in its treatment every conceivable phase of missions, with a valuable statistical survey of the whole field, prepared by Rev. James S. Dennis, the author of *Christian Missions and Social Progress*. The conference was not a council, and aimed at no formulation of organic rules, but it is safe to assert that its deliberations, expressed in the light of a century of experience, have accomplished even more than was expected toward a clearer understanding of the principles and methods of mission work, with an appreciation of its value and a practical progress in the direction of unity. The conference itself presented a striking example of unity. All differences of creed were banished for considerations of general utility, affording a prominent place to questions of physical and medical relief. The fact that the conference of 1900, in theory and practice, stood for what was of practical value, must have some weight in determining its moral influence on the future conduct of missions.

Missions on the whole, but with one or two notable exceptions, present a prosperous outlook, at least when viewed from the optimistic standpoint of the missionary, but even in the more practical judgment of the world the work of Christian evangelization is undoubtedly exerting a considerable influence for humanity. An idea of the vastness of the work already in operation may be gained from the territorial scope included by the Protestant missionary propaganda and from the subjoined statistics of missionary enterprise. These figures consistently represent a year's activity, though not over the same period, inasmuch as the administrative years of the various societies have different limits. They are included in the centennial statistics of Rev. J. S. Dennis, which were offered at the meeting of the Ecumenical Conference on April 23, and supply the most satisfactory statement yet made.

FOREIGN MISSIONARY SOCIETIES OF THE UNITED STATES.

NAME OF SOCIETY.	Date of organization.	Income.		Total number of mission-aries.	Total number of native helpers	Organized churches.	Communicants.	Native contributions.
		From home sources.	From foreign sources.					
American Board of Commissioners for Foreign Missions.....	1810	\$644,201	\$136,171	523	3,155	492	49,732	\$136,171
American Baptist Missionary Union.....	1814	563,494	118,583	459	3,584	1,023	128,204	118,583
Missionary Society of the Methodist Episcopal Church	1819	1,116,726	14,203	698	3,568	676	124,611	249,939
Board of Foreign Missions, Reformed Church in America (Dutch).....	1832	126,888	.....	91	448	43	4,453	9,987
General Conference of Free Baptists.....	1833	20,110a	506	23	234	12	797	400
Domestic and Foreign Missionary Society, Protestant Episcopal Church in the U.S.....	1835	292,178	12,745	102	390	73	5,582	.....
Board of Foreign Missions, General Synod, Reformed Presbyterian Church in North America...	1836	4,500	300	5	87	11	1,130	6 400
Board of Foreign Missions, Presbyterian Church in the U.S.A.....	1837	876,397	18,684	702	2,030	368	35,995	.....
Board of Foreign Missions, General Synod, Evangelical Lutheran Church in the U.S.....	1841	45,950	7,695	34	449	423	6,466	7,695
Seventh-Day Baptist Missionary Society.....	1842	8,000	1,000	7	12	1	51	75
Foreign Mission Board, Southern Baptist Convention	1845	109,267	7,110	82	128	100	5,247	7,110
Board of Missions, Methodist Episcopal Church (South) a.....	1846	256,473	13,403	146	234	275	9,503	.....
Parent Home and Foreign Mission Society, African Methodist Episcopal Church.....	1847	20,000	1,000	3	172	100	10,000	1,000
Cumberland Presbyterian Board of Missions and Church Erection.....	1852	29,079	1,427	24	28	14	788	1,500
Home, Frontier and Foreign Mission Society, United Brethren in Christ a.....	1853	15,000	3,000	32	25	52	7,300	4,000
Board of Foreign Missions, Synod Reformed Presbyterian Church in the U.S. (Covenanters).....	1856	27,350	.....	23	37	3	233	.....
Board of Foreign Missions, United Presbyterian Church of N.A.....	1859	138,982	20,251	119	638	65	7,925	68,224
American Church Missionary Association.....	1860	59,307	2,000	15	17	10	565	3,000
Women's Union Missionary Society of America.....	1860	38,657	5,738	17	262	c	5	.....
Executive Committee of Foreign Missions, Presbyterian Church in the U.S. (South).....	1861	145,236	5,500	163	92	26	3,500	5,500
Board of Foreign Missions of the General Council, Evangelical Lutheran Church in N.A.....	1867	18,751	.....	14	138	7	2,440	.....
Mission, German Evangelical Synod of N.A.....	1867	16,406	.....	13	72	10	1,200	.....
Mission Society, Calvinistic Methodist Church of America.....	1869	1,695	.....	3	3	1	7	.....
American Friends' Board of Foreign Missions.....	1873	41,498	.....	53	92	17	1,279	1,905
Christian Woman's Board of Missions (Church of the Disciples).....	1874	43,019	3,454	40	16	22	1,675	.....
Foreign Christian Mission Society (Church of the Disciples).....	1876d	144,719	8,008	95	132	79	5,280	8,008
Board of Foreign Missions, Associate Reformed Presbyterian Synod of the South.....	1875	8,779	1,000	10	11	10	302	1,000
Mission Society of the Evangelical Association.....	1876	8,500	1,050	4	33	20	890	1,200
Foreign Mission Board of the National Baptist Convention.....	1880	5,208	.....	19	25	45	2,050	.....
Board of Commissioners for Foreign Missions, Reformed Church in the U.S. (German).....	1881	30,118	1,440	18	33	6	1,817	1,440
General Mission Board, Free Methodist Church of N.A.....	1882	14,344	.....	14	13	5	99	.....
General Mission and Tract Committee (g) German Baptist Brethren Church.....	1884	7,390	.....	8	17	11	238	.....
Swedish Evangelical Mission Covenant of N.A.....	1885	10,355	.....	17	6	4	230	.....
Board of Missions and Church Extension, United Synod, Evangelical Lutheran Church (South).....	1886	4,000	.....	4	6	1	60	.....
Mission Board of the Christian Church.....	1886	6,673	218	6	15	7	332	300
Seventh-Day Adventist Foreign Mission Board.....	1887	(not reported.)	.....	.....	.....	.....	.....	.....
Board of Foreign Missions, Methodist Protestant Church (g).....	1888	10,996	225	12	15	6	410	235
Central American Mission.....	1890	7,588	.....	26	25	10	475	.....
Missionary Society Wesleyan Methodist Connection of America.....	1890f	7,000	.....	6	3	.....	20	.....
Universalist General Convention.....	1890	9,802	.....	6	13	(not reported.)	.....	.....
Woman's General Missionary Society of the Churches of God.....	1890	1,000	.....	1	3	g	g	.....
Hauge's Synod China Mission.....	1891	6,073	.....	10	12	1	12	.....
Scandinavian Alliance Mission in N.A.....	1891	25,683	.....	90	h	.....	.....	.....
United Norwegian Lutheran Church in America.....	1892	20,000	.....	9	30	5	(not reported.)	.....
Board of Foreign Missions, Reformed Episcopal Church.....	1894	6,249	.....	5	11	1	(not reported.)	.....
Board of Missions, Lutheran Free Church.....	1895	9,019	.....	10	28	1	103	1,030
German Evangelical Lutheran Synod of Missouri, Ohio and other States (India Mission).....	1896	7,200	.....	8	22	.....	100	.....
Christian Unity Association.....	1896	3,500	.....	9	.....	.....	.....	.....
Christian and Missionary Alliance.....	1897	98,000	.....	247	100	60	.....	.....
Home and Foreign Mission Society, African Methodist Episcopal Zion Church.....	.....	3,000	.....	1	9	6	253	.....
Mission Society of the United Evangelical Church..	1899	8,150g	.....	4	.....	.....	.....	.....
Total, 49.....	.....	\$5,403,048	.....	4,110	16,605	4,107	421,597	\$623,717

a. Includes no statistics of Woman's Auxiliary Societies. b. Estimated. c. Has 29 Sunday schools with 1,865 scholars. d. The Disciples began foreign missionary work in 1849, but the above society was founded 1875. e. Dunkards or Tunkers. f. Date of opening of foreign work. g. Has one Sunday school with 30 scholars. h. Has 36 principal mission stations.

The above table includes only those organizations directly engaged in the conduct of foreign missions. See *PROGRESS OF THE CENTURY*, Appendix.

Missionary Responsibility for the Chinese Crisis.—The relation of the missionaries to the Chinese uprising (see *CHINESE EMPIRE*) occasioned much discussion in 1900, and some of the points brought on each side maybe briefly summarized. Such a national movement might be called patriotic were it not for the fact that the moving impulse was accentuated by the strongest possible race hatred. To the Chinese mind the advent of the missionary is merely the first step in the encroaching policy of Western nations. First comes the missionary with subversive teachings and offensive appeals to his consul, for by the existing extraterritoriality arrangements, a source of great humiliation to China, the consul is supreme arbiter of his countrymen's affairs. The consul is followed by the soldier, whose coming presupposes territorial aggression, enforced trade, and, incidentally, the overturning of the industrial situation with new methods and appliances. The whole status represents a reformation which the majority of Chinese do not want. The presence of the missionary, though his devotion, zeal, and philanthropy seem to be generally recognized, is taken as a standing insult, for he attacks the entire Chinese system, a form of civilization that has endured for ages. The unpopularity of the missionaries is further increased by their mode of life, which seems luxurious as compared with native frugality. Then, again, the freedom of life enjoyed by unmarried women who are connected with the missions is absolutely unintelligible to the Chinese, and is another occasion for serious misunderstanding. It is asserted that while Protestants make no compromise whatever with heathen philosophy, and seek to bring about a total reformation, the Roman Catholics, who, in contrast to Protestant missionaries, devote a lifetime to their work, assume a more sympathetic attitude. They are willing to make concessions for a tentative progress, and aim to modify rather than change completely existing conditions. On the other hand, these very methods, combined with the mingling of politics and religion, of which Protestants also have been accused, has been assigned as one of the primary causes of the outbreak. As to the sincerity of converts, those who are disposed to blame the missionaries for the affair, while far from making a sweeping assertion that all Chinese Christians are converts for mercenary motives, call attention to the fact that when the crisis came few natives were in evidence, though in quiet times the religious precincts had never lacked attendants. The adherents of the missionaries have urged that religious intolerance is not characteristic of the Chinese, as is shown by the fact that the adherents of four religions, Confucianism, Taoism, Buddhism, and Mohammedanism, the last two the result of missionary propagandism, have dwelt together in amicable relations, and the Chinese attitude toward Christianity likewise is one of tolerance, if not of absolute indifference. Missionary occupation of China, it has been affirmed, is perfectly defensible historically and legally, according to several treaties entered into by China, of which the clauses of toleration are believed with reason to be the least offensive features. In answer to the fact that the missionaries and their converts were a special object of attack in some places as proving the existence of a prevailing antipathy against them, the statement has been made that in some districts no foreigners but missionaries could be found and others did not escape where it was possible to reach them, and that where the slaughter of converts did occur it was apparently, in view of their comparative immunity in other localities, because they were considered the allies of the foreigner rather than as the followers of Christianity. The charge that Protestant converts are a bad class of natives has been met with a general denial, and the unimportance of this point, as indicated by the fact that the number of converts has never been very considerable, nor their aggressiveness pronounced, has been emphasized. In the opinion of Professor Warneck, of Halle, a prominent authority on the subject of missions, the reasons for the uprising are to be found elsewhere than with the Protestant missionaries. He agrees decidedly with the line of argument which gives prominence to the German seizure of Kiao Chau, together with the following (summarized by the *Literary Digest*), as the true causes: (1) Reform movements in the inner politics of China; (2) the aggressive and hostile policy of foreign nations in their dealings with the Chinese; (3) the Catholic missionaries and their methods, especially their mixing of politics with religion by appealing to the political powers for protection and revenge on the opponents of their work; (4) the contemptible method of the foreigners in China in their treatment of the natives; (5) the unprincipled business methods of the merchants dealing with the Chinese; (6) the newspaper agitation for a partition of the empire; (7) the disagreements and rivalries of the foreign ambassadors in China; (8) the corruption of the Chinese officials; (9) the fact that the Boer and Philippine wars have revealed to the Chinese a remarkable weakness of two of the leading western nations.

MISSISSIPPI, a Gulf State of the United States, has an area of 46,810 square miles. The capital is Jackson. Mississippi was organized as a Territory April 7, 1798, and admitted as a State December 10, 1817.

Agriculture.—In 1900 Mississippi ranked third among the States in the production of cotton, with a total commercial crop of 1,203,739 bales. Federal officials estimated the area devoted to cotton culture in the season 1900-01 at 2,896,000 acres, and the yield at 159 pounds of lint cotton per acre. Other crops, with the production and value of each, were: Corn, 25,231,998 bushels, \$14,634,559; wheat, 40,781 bushels, \$34,256; oats, 2,390,052 bushels, \$1,099,424; potatoes, 347,094 bushels, \$288,088, and hay, 99,922 tons, \$994,224. The *Bulletin* of the National Association of Wool Manufacturers estimated the wool clip as follows: Number of sheep, 204,745; wool, washed and unwashed, 818,980 pounds; scoured wool, 483,199 pounds.

Industries.—Shipments of yellow pine lumber from January 1 to December 1, 1900, aggregated 251,092,163 feet, and the total amount cut during the same period was 256,343,802 feet. During 1900, 4 new cotton mills, containing 25,000 spindles and 1000 looms, were established. During the calendar year 1899, 4 cigar factories produced 61,321 cigars. Other manufactures subject to internal revenue tax are included in the totals for Louisiana, with which Mississippi constitutes one collection district. The following table gives comparative statistics of the failures of commercial and business concerns for the years 1898, 1899, and 1900:

Year	Number of Failures.	Number of Business Concerns.	Percentage of Failures.	Liabilities.
1898.....	124	9,321	1.33	\$463,966
1899.....	110	9,711	1.13	690,951
1900.....	102	11,047	0.92	485,907

The above figures show not only a steady decrease both in the number and percentage of failures during the last two years, but also a decided gain, most marked in the year 1900, in the number of business concerns operating in the State.

Commerce.—The imports of merchandise at the Pearl River district during the fiscal year ended June 30, 1900, aggregated in value \$1931; exports, \$1,687,863; total, \$1,689,794. This was a gain of \$1492 in imports, and a decrease of \$17,076 in exports.

Railways.—The new railway construction reported for the calendar year 1900 amounted to 125.88 miles, giving the State a total mileage of 2952.7.

Banks.—On October 31, 1900, there were 12 national banks in operation and 5 in liquidation, and the active capital aggregated \$980,000; circulation outstanding, \$921,787; deposits, \$3,869,326, and reserve held, \$1,091,332. The State banks June 30, 1900, numbered 101, and had capital, \$4,279,496; deposits, \$12,547,103, and resources, \$19,345,841.

Finances.—The receipts at the State treasury for the fiscal year ending September 30, 1900, were \$1,924,074; balance in treasury October 1, 1899, \$333,766; total, \$2,257,840. Expenditures during the fiscal year were \$1,635,438, leaving a balance in the treasury October 1, 1900, of \$622,402. The total payable debt on October 1, 1900, was \$1,018,430, which included the State bonded debt of \$1,003,000, and outstanding warrants and interest amounting to \$15,430. In addition there was a debt due the school funds, on which only interest can be paid, aggregating \$1,884,659. The assessed valuations of property in 1900 were as follows: Realty, \$131,315,821; personality, \$57,400,338; railroad, telegraph, express, and sleeping-car companies, \$27,049,788; total, \$215,765,947. The State tax levy in 1900 was 6 mills.

Education.—In 1899 there were 91 public high schools, with 196 teachers and 3866 secondary students; 46 private secondary schools, with 144 teachers and 2221 secondary students; 7 public normal schools, with 15 teachers and 184 students in normal courses, and 11 private normal schools, with 39 teachers and 566 students in normal courses. Four colleges for men and for both sexes reported 44 professors and instructors, 500 preparatory, collegiate, and graduate students, and a total income of \$80,240; 2 schools of technology reported 40 professors and instructors, 588 preparatory, collegiate, and graduate students, and a total income of \$84,378; and 12 colleges and seminaries for women reported 138 professors and instructors, 1603 preparatory, collegiate, and graduate students, and a total income of \$130,563. The only professional schools reported were 2 law schools, with 13 instructors and 62 students.

National Guard.—The Mississippi National Guard consists of 28 staff officers, 95 cavalry, 279 artillery, and 928 infantry. The total number of troops authorized is 1800, and the total number of men liable to military service is 235,000. The State appropriation for military purposes is \$6000.

Population.—The population, according to the United States census, was 1,289,600 in 1890, and 1,551,270 in 1900; increase for the decade, 261,670, or 20.3 per cent. The largest cities, with population in 1900, are: Vicksburg, 14,834; Meridian, 14,050; Natchez, 12,210, and Jackson, 7816.

Legislature.—The regular biennial session of the Mississippi Legislature convened in the city of Jackson on January 2, 1900, and adjourned on March 13. At its previous session the Legislature had provided for the submission to popular vote in

November, 1899, of an amendment to the State constitution directing that chancellors and judges of the Supreme and Circuit courts should be nominated by political parties and elected in the same manner as that provided for the election of governor. This amendment having been ratified by popular vote, the House and Senate adopted resolutions declaring it to be a part of the State constitution. On May 30 the Supreme Court held this elective judiciary amendment to be unconstitutional and void. In accordance with the returns of a popular election held to vote upon a proposed constitutional amendment, the House and Senate adopted a resolution declaring as part of the constitution of Mississippi a provision giving levee commissioners of the levee district power to cede their rights of way, levees, and the maintenance and control of them to the government of the United States.

Trust Law.—On March 12 an act by the Legislature was approved defining trusts and providing for their suppression, in order that "benefits arising from competition in business might be preserved to the people of the State." By this act any corporation might be proceeded against as constituting a trust which attempted to restrain the freedom of trade or production or to monopolize the sale or control of any commodity, or to engross the management of any kind of business, or to destroy competition by offering any commodity for sale at a price below the normal cost of production. A corporation which constituted a trust as thus defined, or which was "concerned in" a trust, should, if a domestic corporation, forfeit its charter and franchise; and if a foreign corporation, should forfeit its right to do business in the State. Persons acting in any capacity to form or promote a trust should, upon conviction, be fined or imprisoned or both. Every corporation was forbidden, under penalty of forfeiting its charter, to possess an interest in the capital stock, plant, or equipment of any other corporation which was engaged in the same kind of business, and would, under normal conditions of trade, be a competitor. Corporations were also forbidden to engage in any business which was not expressly authorized by their charters or reasonably incidental thereto. Any person directly or indirectly injured by a trust or combine might recover the sum of \$500 and also the value of all actual damages suffered by him.

Encouragement of Manufactories.—On March 6 an act was approved to encourage the establishment in Mississippi of manufactories. The act provided that all factories or plants which should be established in Mississippi prior to 1910 should be exempt from State, county, and levee taxation for a period of five years, providing that they were factories "for making cotton, jute, ramie, wool, silk, furs, or metals," or "for manufacturing machinery, implements, or articles in a finished state," or for making wagons, clothing, or shoes complete, and providing also that such manufactories did not belong to or constitute a trust or pool. Cities and towns were authorized to further encourage manufactories meeting these requirements by exempting them from municipal taxation for a period not to exceed ten years.

A concurrent resolution was also passed cordially inviting the investment in Louisiana of capital for the further establishment of industrial enterprises, and especially of cotton factories, and assuring such establishments that they would receive "every just form of encouragement and protection."

Elections.—The vote for governor in 1899 resulted in a victory for the Democratic nominee, A. H. Longino, over his Populist opponent, Prewett, by a plurality of over 35,000. As a result of the congressional elections in 1900, four of Mississippi's seven Democratic representatives were returned to the 57th Congress. The three changes made were as follows: E. S. Chandler, Jr., was nominated and elected in place of John M. Allen; Patrick Henry (of Vicksburg) was nominated and elected in place of T. C. Catchings; Charles E. Hooker was nominated and elected in place of Patrick Henry (of Brandon.) The Legislature of 1900 consisted, in the Senate, of 45 Democrats, and in the House of 132 Democrats and 2 Populists. The Legislature of 1901 will stand politically precisely as that of 1900. At a joint session of the two Houses on January 16, 1900, two United States senators were elected. Will Van Amberg Sullivan, who had been nominated by the governor to fill out the term ending March 4, 1901, of Edward C. Walthall, until the meeting of the Legislature, was unanimously elected by the Legislature for the remainder of the term. For the succeeding term of the same office, ending March 4, 1907, A. J. McLaurin was unanimously elected. In the national election Bryan received 51,706 votes, and McKinley, 5753. In 1896 Bryan received 63,253 votes, and McKinley, 4849. Bryan's plurality was thus reduced from 58,404 to 45,953.

Constitutional Amendments.—Concurrent resolutions were passed by the Legislature of 1900. First, proposing an amendment to the constitution requiring the poll tax to be retained in the counties where the same is collected, and not distributed among the several counties and separate school districts in proportion to the number of educable children in each, as previously; and, second, proposing an amendment providing for a new apportionment after the federal census of 1900, and decennially thereafter, of State senators and representatives.

Both of these amendments were adopted at the elections held in November.

State Officers and National Representatives.—State officers for 1900: Executive—governor, A. H. Longino; lieutenant-governor, J. T. Harrison; secretary of state, J. L. Power; treasurer, J. R. Stowers; auditor, W. Q. Cole; superintendent of education, H. L. Whitfield; attorney-general, Monroe McClurg; adjutant-general, William Henry—all Democrats.

Supreme Court: Chief justice, Thomas H. Woods; associate justices, S. H. Terral and Albert H. Whitfield; clerk, E. W. Brown—all Democrats.

State officers for 1901: Same as for 1900.

Supreme Court: Same as for 1900.

Congressional representatives for 1900 (56th Congress): J. M. Allen, Thomas Spight, T. C. Catchings, Andrew F. Fox, J. S. Williams, F. A. McLain, and Patrick Henry—all Democrats.

Congressional representatives for 1901 (57th Congress): E. S. Chandler (Corinth), T. Spight (Ripley), Patrick Henry (Vicksburg), Andrew F. Fox (West Point), J. S. Williams (Yazoo), F. A. McLain (Gloster), and Charles E. Hooker (Jackson)—all Democrats.

Senators for 1900 (56th Congress): W. Van Amberg Sullivan (Oxford) and H. De Soto Money (Carrollton) (until 1905).

Senators for 1901 (57th Congress): H. D. Money (until 1905), A. J. McLaurin (until 1907).

MISSOURI, a central State of the United States, located in the Mississippi Valley, has an area of 69,415 square miles. The capital is Jefferson City. Missouri was organized as a Territory December 7, 1812, and admitted as a State August 10, 1821.

Mineralogy.—The production of zinc in 1900 was 474,560,910 pounds; of lead, 59,023,910 pounds; total value, \$7,967,335, as against \$10,802,467 in 1899, the high value in 1899 being due chiefly to inflated prices. In 1899 the output of coal was 3,025,814 short tons; spot value, \$3,591,945, and in 1900, 2,995,022 tons, valued at \$3,643,975. Lead and zinc were mined in 21 counties and coal in 36. The total number of shafts operated was 1453, in which 13,289 miners worked. The coal tonnage of 1899 was the greatest for ten years. The production of iron ore in 1899 was 22,720 long tons, nearly all of the red hematite variety, the value of which was \$42,203. Quarrying in 1899 yielded limestone to the value of \$977,399; granite, \$151,688; and sandstone, \$57,662.

Agriculture.—The principal crops, with the amount of production and the value for the calendar year 1900, were: Corn, 180,710,404 bushels, \$57,827,329; wheat, 18,846,713 bushels, \$11,873,429; oats, 24,695,373 bushels, \$5,679,936; potatoes, 10,106,961 bushels, \$3,537,436; hay, 2,768,015 tons, \$19,237,704; rye, 134,498 bushels, \$68,594; buckwheat, 31,187 bushels, \$21,519, and barley, 14,830 bushels, \$6674. The total commercial crop of cotton in 1900 was 17,275 bales. The wool clip for 1900 was estimated as follows: Number of sheep, 570,128; wool, washed and unwashed, 3,420,768 pounds; wool, scoured, 1,710,384 pounds. The demand from South Africa for horses and mules for army purposes has furnished the stock trade with a new market for these animals, and the number shipped from Missouri during 1900 was not only largely in excess of shipments in previous years, but the animals brought better prices as well.

Manufactures.—In 1899 there were 967 manufacturers of cigars and 66 of tobacco. The output for the calendar year was 70,115,662 cigars, 74,467,480 cigarettes, and 67,447,534 pounds of tobacco, of which 62,000,000 pounds was plug cut and 5,000,000 pounds smoking tobacco. Grain and fruit distilleries in operation during the fiscal year ended June 30, 1900, numbered 83. The amount of fruit brandy produced was 3498 gallons; fermented liquors, 2,461,252 barrels; spirits rectified, 3,225,761 gallons, and distilled spirits gauged, 6,619,599 gallons. The total output of oleomargarine was 4,107,696 pounds. Missouri and Colorado together produced 138,880 long tons of pig iron in 1899, and 159,204 long tons in 1900. Shipments of yellow pine lumber from January 1 to December 1, 1900, aggregated 162,829,001 feet, and the total amount cut during the same period was 146,108,250 feet. Hogs packed and marketed at St. Louis, Kansas City, and St. Joseph during the year ended March 1, 1900, numbered 5,476,411.

Commerce.—During the fiscal year ending June 30, 1900, the imports of merchandise at Kansas City, St. Joseph, and St. Louis aggregated in value \$4,480,283, and the exports at Kansas City, \$7505; total, \$4,487,788. The increase in imports for the year was \$1,062,643, and in exports, \$2019.

Railways.—The new railway construction reported for the calendar year 1900 was 52.91 miles, giving the State a total mileage of 6962.36.

Banks.—On October 31, 1900, there were 67 national banks in operation and 66 in liquidation, and the active capital aggregated \$17,950,000; circulation outstanding, \$12,821,374; deposits, \$115,973,521, and reserve held, \$36,041,271. The State banks, June 30, 1900, numbered 510, and had capital, \$18,592,225; deposits, \$80,563,205, and

resources, \$113,802,415, and the private banks, 90, with capital, \$924,370; deposits, \$8,097,417, and resources, \$9,400,775. The exchanges at the clearing houses at St. Louis, Kansas City, and St. Joseph in the year ending September 30, 1900, aggregated \$2,555,580,885, an increase of \$207,303,174 in a year. In 1900 there were 191 building and loan associations in the State, with a total membership of 38,000, and assets aggregating \$13,835,817.

Finances.—The balance in the State treasury, January 1, 1896, was \$577,463; receipts for the four years ended December 31, 1900, \$24,618,882; total, \$25,196,345. The disbursements for the four years aggregated \$24,117,413, leaving a balance in the treasury, January 1, 1901, of \$1,078,932. The total bonded debt amounted to \$1,887,000, reduced from \$5,000,000 in four years. Certificates of indebtedness in connection with the school fund increased the total debt of the State to \$6,280,839, a reduction since 1896 of about 30 per cent. The amount in the sinking fund in 1900 was \$217,323. During the year ended June 30, 1900, 107,000 acres of vacant lands were occupied by new settlers, thus materially increasing the taxable wealth of the State.

Education.—The school census of 1899 showed the number of children between the ages of 6 and 20 years to be 981,722. The enrolment in the public schools was 668,018, and the average daily attendance, 416,364. There were 13,782 teachers, 10,326 buildings used as school-houses, and public school property valued at \$17,020,880. The school revenue was \$6,734,315; expenditures, \$7,048,826, of which \$4,663,209 was for teachers' and superintendents' salaries. The average expenditure per pupil for the whole school year was \$16.93. There were 211 public high schools, with 705 teachers and 19,524 secondary students; 74 private secondary schools, with 339 teachers and 4669 secondary students; 4 public normal schools, with 58 teachers and 1600 students in normal courses, and 5 private normal schools, with 27 teachers and 145 students in normal courses. Twenty-seven universities and colleges for men and for both sexes reported 452 professors and instructors, 5627 preparatory, collegiate, and graduate students, and a total income of \$569,489, and 11 colleges and seminaries for women reported 175 professors and instructors, 1148 preparatory, collegiate, and graduate students, and a total income of \$165,493. The professional schools comprised 7 theological schools, with 35 instructors and 567 students; 3 law schools, with 40 instructors and 371 students, and 17 medical schools, with 491 instructors and 2212 students. The enrolment at the State University for the term 1900-01 was 1473, a gain in 4 years of 85 per cent.

Penal and Charitable Institutions.—The population of the several State institutions in 1900 was as follows: Insane asylum, 2631; school for the blind, 103; school for the deaf and dumb, 321; boys' reform school, 340; industrial home for girls, 101; Federal soldiers' home, 102; Confederate soldiers' home, 150; penitentiary, 2085. The State laws provide for the maintenance of free employment offices in all cities having a population of 100,000 inhabitants and over. Such offices in Kansas City and St. Louis found employment during the year ended October 1, 1900, for 6186 persons.

Population.—According to the United States census, the population in 1890 was 2,679,184; in 1900, 3,106,665; increase for the decade, 427,481, or 16 per cent. The four largest cities, with population in 1900, are: St. Louis (the fourth largest city in the United States), 575,238; Kansas City, 163,752; St. Joseph, 102,979; and Joplin, 26,023.

Department Stores.—On February 20 the Supreme Court of Missouri handed down a decision stating that the law passed by the State Legislature in 1890, imposing a special tax on department stores, was class legislation, violative of the constitution of Missouri and illegal. The law went into effect in September, 1899, and applied to stores in St. Louis, Kansas City, and St. Joseph, in which fifteen or more persons were employed. For each one of fifty specified groups or classes of goods which these stores sold they were obliged to take out a license costing not less than \$300 and not more than \$500.

St. Louis Car Strike.—On May 8, 1900, about 3500 men employed by the St. Louis Transit Company went out on strike. Much lawlessness ensued, extending over a period of several weeks, and resulting in the death or injury of many persons and in the loss of millions of dollars to business and property interests. The cause of the strike reached back to the dissatisfaction felt by the men in the preceding winter over the treatment which the company accorded to union men, the number of hours the employees were required to work and the unequal rate of payment given therefor. Representations to the company on these subjects resulted on March 10 in the company's agreeing (*inter alia*) (1) to re-employ any one who had been discharged solely on the ground that he belonged to the local order of the Amalgamated Association of Street Railway Employees, and (2) to order that 10 hours' labor, completed when possible within 12 consecutive hours, should constitute a day's work, and (3) to pay a uniform wage of 20 cents an hour. The union complained in the

weeks that followed that the company had only in part altered its rates and wages as provided for in the agreement, and that an opposition labor organization had been formed at the instigation and with the co-operation of the company for the purpose of wrecking the local union order. An ultimatum was therefore presented to the company in which the following were among the demands made: (1) That all employees of the company should be required to be members of the union; (2) that no employee should be discharged except by consent of the union, or except upon the findings of a board of arbitration appointed by joint action of the company and the union; (3) that any employee suspended from the union should also be suspended from the company, and should later, and, if the union so requested, be reinstated by the company with full pay for the time he was absent; (4) that proposed changes in time-table should be submitted to union officials for approval at least 48 hours before going into effect. These demands were characterized by those opposed to the union as an attempt to obtain "a partnership of management without responsibility for mismanagement." The company declined to accede to them and the strike was declared. On July 2, after much rioting and a general decline of business activity throughout the city, the strike was declared off upon an agreement between the company and the union to the following effect: (1) Rates and hours of service to remain in force as provided for in the agreement of March 10; (2) no employee to be discriminated against for joining or for not joining any union; (3) an attempt by an employee to induce another employee, by threat or intimidation, to join any union to be sufficient cause for his discharge; (4) any attempt by an official to persuade an employee not to join any union to be cause for the official's discharge; (5) the company to discuss grievances at any time, with an employee, committee of employees, or *association* of employees; (6) existing or future existing vacancies to be filled by the company from a list drawn up by the union of employees in the service of the company on May 7; this list to be exhausted before the company should employ men elsewhere. On July 10 the strike was again declared on, the union stating that the company had employed non-union men since July 2, in violation of article 6 of the agreement of that date. In support of this contention the union produced sworn affidavits of men employed by the company on July 10, and employed elsewhere prior to that day and after July 2. The company, on the other hand, entered a general denial of the charge, and said that after July 2 it had only employed such non-union men as had been previously contracted for, and whom consequently the company could not in honor turn away. After the declaration of this second strike the power of the union to obstruct the traffic of the company and to retain sufficient sympathizers to insure the success of the strike seemed gradually to wane. It was thought by many that business had been long enough disturbed, and that the strike of July 10 was without adequate cause. On September 12 the union formally announced that the strike was off and that their men might apply to the company for re-employment without forfeiting membership in the union.

Constitutional Amendments.—Seven constitutional amendments were adopted at the election in November, 1900. These amendments were as follows:

Mortgages are to be deemed part of the property mortgaged, and the property itself, exclusive of the mortgage, is to be taxed for its value minus the value of the mortgage, the mortgage to be taxed on the remainder of the value.

In civil cases two-thirds of the jury may render a verdict in courts which are not of record and three-fourths of the jury in courts which are of record.

Criminal prosecutions for felony or misdemeanor are to be by indictment or information.

Except upon an order of a judge no grand jury may be convened; but when convened a jury may indict for all grades of crime.

Township boards or county courts may levy a special tax of $1\frac{1}{2}$ mills upon all assessable property for the purpose of roads or bridges; but this tax may not be so levied in the cities of St. Louis, Kansas City, and St. Joseph.

St. Louis may issue bonds to the extent of \$5,000,000 for purposes of the St. Louis Centennial Exposition, to be held in 1903.

An appropriation may be made from the sinking fund set aside for the State debt in order to aid a State exhibit to be given at the centennial of 1903.

Elections.—The State election in 1900 resulted in a victory for Alexander M. Dockery, the Democratic nominee for governor, by a plurality of 32,147. He received 350,049 votes, while his Republican opponent, Flory, received 317,902. The State election for congressmen resulted in returning to the 57th Congress 14 of Missouri's 15 representatives. Horton (Rep.) was nominated in place of Charles E. Pearce (Rep.), but was defeated by James J. Butler (Dem.). In the 57th Congress 13 of Missouri's 15 representatives will be Democrats. The Missouri Legislature of 1900 consisted, in the Senate, of 9 Republicans and 25 Democrats, and in the House of 58 Republicans and 80 Democrats. In 1901 the Legislature will consist, in the Senate, of 9 Republicans and 25 Democrats, and in the House of 51 Republicans, 88

Democrats and 1 Populist. In the national election Bryan received 351,912 votes and McKinley, 314,091. In 1896 Bryan received 363,667 votes and McKinley 304,940. Bryan's plurality was thus diminished from 58,727 to 37,821.

State Officers and National Representatives.—State officers for 1900: Executive—governor, Lon V. Stephens; lieutenant-governor, A. H. Bolte; secretary of state, A. A. Lesueur; treasurer, F. L. Pitts; auditor, J. M. Seibert; adjutant-general, M. F. Bell; attorney-general, E. C. Crow; superintendent of education, W. T. Carrington; railroad and warehouse commissioners, J. Flory, T. J. Hennessey, and W. E. McCully; secretary State Board of Agriculture, J. R. Rippey; superintendent of insurance, E. T. Orear—all Democrats except J. Flory.

Supreme Court: Chief justice, J. B. Gantt; associate justices, T. A. Sherwood, G. D. Burgess, Theo. Brace, L. B. Valliant, W. C. Marshall, and W. M. Robinson; clerk, J. R. Green—all Democrats except Robinson.

State officers for 1901: Executive—governor, A. M. Dockery; lieutenant-governor, J. A. Lee; secretary of state, S. B. Cook; treasurer, R. P. Williams; auditor, A. O. Allen; adjutant-general, M. F. Bell; attorney-general, E. C. Crow; superintendent of education, W. T. Carrington; secretary of agriculture, J. R. Rippey; superintendent of insurance, E. T. Orear; commissioner of labor, T. P. Rixey—all Democrats.

Supreme Court: Same as for 1900.

Congressional representatives for 1900 (56th Congress): J. T. Lloyd (Shelbyville), W. W. Rucker (Keytesville), John Dougherty (Liberty), C. F. Cochran (St. Joseph), W. S. Cowherd (Kansas City), David A. De Armond (Butler), James Cooney (Marshall), D. W. Shackelford (Jefferson City), Champ Clark (Bowling Green), R. Bartholdt (St. Louis), C. F. Joy (St. Louis), Edward Robb (Perryville), W. D. Vandiver (Cape Girardeau), C. E. Pearce (St. Louis), M. E. Benton (Neosho)—all Democrats except Bartholdt, Joy, and Pearce.

Congressional representatives for 1901 (57th Congress): Same as for 1900, except that J. J. Butler (Dem.) takes the place of C. E. Pearce (Rep.).

Senators for 1900 (56th Congress): George G. Vest (until 1903), from Kansas City, and F. M. Cockrell (until 1905), from Warrensburg—both Democrats.

Senators for 1901 (57th Congress): Same as for 1900.

MISSOURI UNIVERSITY OF THE STATE OF, established 1839, is located at Columbia, Mo., with a school of mines at Rolla. The total enrolment in 1899-1900, deducting duplicated names and omitting 268 summer school students, was 938, as follows: Graduate department, 35; academic, 418; law, 106; medical, 61; education, 71; agriculture and mechanical arts, 391; mines, 168. The faculty numbered about 70. With the additions of the year the library now numbers 36,400 volumes. The endowment of the university, including grounds, etc., is about \$2,500,000. The annual income includes \$38,000 from the federal government (Hatch and Morrill acts) and annual State grants. The income from all sources in 1899-1900 was stated (unofficially) at \$230,000. The report of the board of curators of the university calls attention to the need of a permanent income from the State by a special tax on a certain percentage of State revenues, instead of by the present biennial appropriation. This is done for the State universities in Ohio, Indiana, Illinois, Wisconsin, Minnesota, Michigan, Kansas, Nebraska, California, and perhaps other States. In Missouri funds for the support of the university are provided by appropriation, and depend entirely upon the Legislature and the demands upon the State Treasury, designated as the general scramble. Upon the basis of one-sixth of a mill per dollar on the assessed value of taxable property of the State there would be assured an annual income from the State of \$165,700, based on present valuations. It has been pointed out that in the southwest a leading university must sooner or later arise, and that the State institutions of Illinois, Iowa, Kansas, Nebraska, and Texas are all striving for this distinction. In the summer of 1899 Dr. Howard Ayres resigned the chair of biology to assume the presidency of the University of Cincinnati. Mr. William R. Parker gave \$15,000 for the erection of a hospital, the university fulfilling a condition of the gift by raising an additional \$10,000. The university is aiding greatly in the development of secondary schools. It has 103 such schools on its list of approved schools whose students may enter the freshman class on certificate. See **UNIVERSITIES AND COLLEGES**.

MIVART, ST. GEORGE, F.R.S., zoologist and author, died April 1, 1900, in London. He was born in London, November 20, 1827, and received his early education at Clapham Grammar School and Harrow. In 1844 he adopted the Roman Catholic faith, which prevented his matriculation at Oxford, where his father intended that he should be educated. This event had considerable bearing on Mivart's entire life, influencing to a certain degree his scientific and philosophical writing.

Debarred from the older university, Mivart studied at King's College, London, and St. Mary's College, Oscott; and reading law, he was admitted to the bar in

1851. His attention was soon directed to medical and biological studies, and he published extensively on these subjects. His best-known works in zoology are the following: *Lessons in Elementary Anatomy* (1872); *Man and Apes* (1873); *Lessons from Nature* (1876); *Contemporary Evolution* (1876); *The Cat* (1881); *A Monograph of the Canidae* (1890); *Birds: An Introduction to Ornithology* (1892); *Types of Animal Life* (1893); *An Introduction to the Elements of Science* (1894). In the latter part of his life Professor Mivart became involved in a controversy with the Roman Catholic Church through its representative in London, Cardinal Vaughan, archbishop of Westminster, on account of his scientific teachings and views. He had endeavored to bring about a reconciliation between modern science and culture with the ancient dogma and modern teaching of the Catholic Church. Dr. Mivart argued that as the Holy Office and the Sacred Congregation of the Index of the Church had erred in their interpretation of Scripture as applied to the movement of the earth, Catholics were absolved from their authority in similar matters. A series of articles on *Happiness in Hell*, published in the *Nineteenth Century* in 1892 and 1893, soon brought Professor Mivart in direct conflict with the Church, and he was denounced to the Inquisition, and his writings on hell were censured. The necessity of greater freedom in regard to the interpretation of the Bible and of disclaiming the infallibility of the Church in past decrees of councils seemed to Mivart to warrant aggressive measures. Accordingly, he prepared articles expressing his views, which were published in the January, 1900, numbers of the *Fortnightly Review* and the *Nineteenth Century*. The challenge was promptly accepted. Cardinal Vaughan demanded of Mivart that he subscribe to a profession of faith in which there was included the following statement: "I receive all the books of the Old and New Testaments, with all their parts as set forth in the fourth session of the Council of Trent and contained in the ancient Latin edition of the Vulgate, as sacred and canonical; and I firmly believe and confess that the said Scriptures are sacred and canonical, not because, having been carefully composed by mere human industry, they were afterward approved by the Church's authority, nor merely because they contain revelation with no admixture of error, but because, having been written by the inspiration of the Holy Ghost, they have God for their author, and have been delivered as such to the Church herself." In reply Professor Mivart communicated with the archbishop, asking him for an authoritative answer to the question whether signing such a declaration would be equivalent to an assertion that there were no errors in the Bible, and carry with it the acquiescence in statements which from an historical or scientific standpoint could not be considered literally true. Such a direct reply was not forthcoming, Dr. Mivart being referred to authoritative statements of Pope Leo XIII. and other writers. Accordingly, in February the great scientist was excommunicated, and his death, which followed in April, aroused universal interest.

MONAZITE. The yield of monazite in the United States in 1899 was 350,000 pounds, valued at \$20,000. This substance is mined in North and South Carolina, and is used in the manufacture of the mantles for incandescent gas-lights. Monazite contains the rare earths thorium and cerium, which are essential constituents of these mantles. Monazite occurs in sand, which contains 60 to 80 per cent. of the mineral. It is also found in Brazil, in the province of Bahia.

MONEY. The table on the following page, compiled by the United States director of the mint, shows the stock of gold in the countries of the world on January 1, 1899, and on January 1, 1900. There is also shown the stock of silver and uncovered paper in the world on January 1, 1900, together with estimates of population, and a general comparison is instituted between the total money of the world in 1899 and in 1900. See articles **GOLD**; **SILVER**, and **COINS**, and also **UNITED STATES** (paragraph Currency).

MONTANA, a northwestern State of the United States, has an area of 146,080 square miles. The capital is Helena. Montana was organized as a territory May 26, 1864, and admitted as a State November 8, 1889.

Mineralogy.—The mineral product of 1899 was the greatest in the history of the State. All the copper, silver, gold, and lead mined during the year had a gross valuation of \$68,457,308, an increase of \$17,138,240 over the preceding year. The following shows the production and value of these metals: Copper, 245,602,214 pounds, \$40,941,906; silver, 16,850,755 ounces, \$21,786,835; gold, 233,126 ounces, \$4,819,157; lead, 20,344,750 pounds, \$909,410. The coal product for 1899 was but slightly in excess of the output in the preceding year, and failed to reach the tonnage won in 1895 and the two succeeding years. The total output was 1,496,451 short tons, valued at \$2,347,757 at the mines. In proportion to the amount of coal mined Montana ranked first among the States in the use of mining machines, nearly 60 per cent. of the total product being secured by mechanical means. The principal quarry products were limestone, valued at \$113,718, and sandstone, \$26,160. The estimated produc-

COUNTRIES.	Population.	STOCK OF GOLD.		STOCK OF SILVER.			PER CAPITA.				
		1899.	1900.	Full tender.	Limited tender.	Total.	Uncovered paper.	Gold.	Silver.	Paper.	Total.
United States.....	76,300,000	\$945,800,000	\$1,020,200,000	\$563,800,000	\$90,000,300	\$653,800,000	\$586,600,000	\$13.37	\$8.43	\$4.41	\$26.21
United Kingdom.....	40,700,000	462,300,000	496,700,000	381,000,000	111,900,000	492,900,000	462,300,000	11.96	2.75	2.75	17.46
France.....	38,500,000	810,600,000	810,600,000	59,300,000	421,200,000	480,500,000	421,200,000	21.05	10.94	5.04	37.03
Germany.....	52,800,000	672,800,000	697,900,000	85,600,000	122,800,000	208,400,000	173,900,000	13.35	3.96	3.32	20.65
Belgium.....	6,700,000	21,100,000	21,000,000	35,000,000	5,000,000	40,000,000	92,900,000	3.15	6.97	13.86	22.98
Italy.....	31,900,000	98,000,000	98,000,000	16,000,000	27,900,000	43,900,000	174,900,000	3.07	1.38	5.48	9.93
Switzerland.....	3,100,000	24,000,000	24,000,000	500,000	1,000,000	1,500,000	20,500,000	7.74	8.45	6.61	17.80
Greece.....	2,400,000	53,400,000	77,200,000	.....	.....	.....	28,900,000	.17	.62	12.00	12.70
Spain.....	17,700,000	5,300,000	5,200,000	.....	.....	.....	157,400,000	4.36	13.77	8.89	27.02
Portugal.....	5,100,000	13,100,000	7,100,000	.....	.....	.....	74,100,000	1.02	1.92	14.53	17.47
Roumania.....	5,600,000	1,000,000	1,500,000	.....	.....	.....	14,100,000	1.26	.11	3.51	4.72
Serbia.....	2,400,000	221,400,000	224,800,000	50,000,000	1,700,000	1,750,000	98,300,000	.63	.70	1.37	2.70
Austria-Hungary.....	46,300,000	221,400,000	224,800,000	50,000,000	3,500,000	3,500,000	98,300,000	5.27	2.06	2.01	9.36
Netherlands.....	5,100,000	30,200,000	27,500,000	49,900,000	3,500,000	53,400,000	41,500,000	5.89	10.47	8.14	24.00
Norway.....	2,100,000	8,600,000	8,600,000	.....	2,400,000	2,400,000	5,400,000	4.09	1.14	2.57	7.80
Sweden.....	5,100,000	13,000,000	13,400,000	.....	6,800,000	6,800,000	31,000,000	2.62	1.33	6.07	10.08
Denmark.....	2,800,000	16,900,000	15,800,000	.....	5,900,000	5,900,000	6,200,000	6.87	2.43	2.70	12.00
Russia.....	130,900,000	740,400,000	791,700,000	30,000,000	104,500,000	104,500,000	6,200,000	6.05	1.63	.....	6.89
Turkey.....	24,500,000	50,000,000	50,000,000	.....	10,000,000	40,000,000	.....	2.04	1.63	.....	3.67
Australasia.....	123,100,000	128,600,000	128,600,000	.....	6,100,000	6,100,000	.....	28.56	1.35	.....	29.95
Egypt.....	9,800,000	30,000,000	30,000,000	.....	6,400,000	6,400,000	.....	3.06	.65	.....	3.71
Mexico.....	12,600,000	8,600,000	8,600,000	106,000,000	2,400,000	106,000,000	54,400,000	.98	8.41	4.33	13.41
Central America.....	3,500,000	1,000,000	1,400,000	9,300,000	15,800,000	11,700,000	7,600,000	.40	3.43	2.17	5.91
South American States.....	38,700,000	73,700,000	73,900,000	8,400,000	15,800,000	24,200,000	1,190,200,000	1.88	.62	80.50	83.00
Japan.....	43,900,000	54,000,000	61,000,000	26,100,000	36,100,000	26,100,000	69,900,000	1.39	.59	1.60	3.68
India.....	296,900,000	23,200,000	23,200,000	889,300,000	.....	889,300,000	33,400,000	.07	1.31	.11	1.49
China.....	385,500,000	.....	.....	750,000,000	.....	750,000,000	.....	.....	1.96	.....	1.96
Strait Settlements.....	4,500,000	.....	.....	940,000,000	.....	940,000,000	.....	.....	53.77	.....	53.77
Canada.....	5,500,000	30,000,000	30,000,000	.....	2,000,000	2,000,000	40,500,000	8.63	.90	7.37	11.90
Cuba.....	1,600,000	2,000,000	2,000,000	.....	1,500,000	1,500,000	5,000,000	1.35	.98	.....	2.18
Haiti.....	1,200,000	1,000,000	1,000,000	1,000,000	1,500,000	2,500,000	3,500,000	1.00	2.50	3.50	7.00
Bahia.....	3,300,000	1,000,000	1,000,000	.....	3,400,000	6,800,000	.....	.80	2.06	.....	2.86
Siam.....	20,000,000	20,000,000	20,000,000	198,000,000	.....	198,000,000	2,100,000	4.00	38.60	.40	43.00
Cape Colony.....	2,200,000	37,500,000	37,500,000	.....	1,000,000	1,000,000	.....	17.05	.45	.....	17.50
South African Republics.....	1,100,000	23,200,000	29,200,000	.....	1,300,000	1,300,000	.....	26.54	1.09	.....	27.63
Finland.....	2,600,000	4,100,000	4,400,000	.....	1,400,000	400,000	9,300,000	1.69	.15	3.58	5.43
Total, 1900.....	1,319,100,000	.....	\$4,841,000,000	\$2,892,600,000	\$938,300,000	\$3,831,900,000	\$2,960,100,000	\$3.66	\$2.89	\$2.24	\$8.79
Total, 1899.....	1,317,300,000	\$4,614,000,000	.....	\$3,102,500,000	\$728,300,000	\$3,832,800,000	\$2,846,500,000	\$3.50	\$2.91	\$2.16	\$8.57

tion of gold for the calendar year 1900 was 248,000 fine ounces, value, \$5,126,615; of silver, 16,750,000 fine ounces, value, \$10,217,500.

Agriculture.—Montana leads all the other States in sheep farming and yield of wool. The *Bulletin* of the National Association of Wool Manufacturers estimate the number of sheep in 1900 at 3,717,160; wool, washed and unwashed, 26,020,120 pounds; wool, scoured, 9,627,444 pounds. Other live stock in 1900 comprised 546,918 cattle, valued at \$12,958,054, and 194,470 horses, valued at \$3,444,666. The product and value of the principal crops for 1900 were: Hay, 590,658 tons, \$5,138,725; wheat, 1,929,963 bushels, \$1,177,277; oats, 2,568,735 bushels, \$1,078,869; barley, 201,527 bushels, \$66,733; corn, 23,970 bushels, \$14,142, and potatoes, 640,654 bushels, \$339,547.

Industries.—Nine breweries reported the aggregate amount invested on June 30, 1900, to be \$1,015,000, and the combined production of beer, 100,429 barrels, valued at \$488,316. The total number of pressed, fire, and paving-brick manufactured in 1899 was 20,935,000, valued at \$208,394. The value of the year's output of sewer pipe and fire clay was \$225,844. Twenty-five saw-mills reported a combined production of 68,647,952 feet of lumber, valued at \$333,144; 4,158,000 lath, valued at \$4827; and 215,000 shingles, valued at \$500. About 25 mills in the State failed to report, and the annual output of lumber from Montana is estimated at 275,000,000 feet.

Commerce.—The following figures are for Montana and Idaho, which constitute one district in the reports of the United States customs: Imports of silver, \$224,782; imports of merchandise, \$429,519; exports of merchandise, \$148,127; total foreign trade, \$802,428.

Railways.—The new railway construction for the calendar year 1900 amounted to 30.53 miles, giving the State a total mileage of 3025.59.

Banks.—On October 31, 1900, there were 21 national banks in operation and 21 in liquidation. The capital stock aggregated \$2,305,000; circulation outstanding, \$1,038,483; deposits, \$13,448,537; and reserve held, \$4,922,643. The State banks, July, 2, 1900, numbered 15, and had capital, \$990,000; deposits, \$6,066,057; and resources, \$8,366,269; and private banks, 6, with capital, \$271,000; deposits, \$3,509,883; and resources, \$4,096,312. The exchanges at the Helena clearing house during the year ended September 30, 1900, aggregated \$32,245,277, an increase of \$1,024,363 in a year.

Finances.—Assessed valuations in 1900 comprised: Real estate, \$75,173,763; personal property, \$63,227,735; railroad property, \$15,000,100; and mine products, \$14,168,708; total, \$167,570,306. The tax levy was 2½ mills.

Education.—For secondary education in 1899 there were 15 public high schools, with 43 teachers and 992 secondary students; 2 private secondary schools, with 9 teachers and 53 secondary students; and for higher education, 1 public normal school, with 8 teachers and 130 students in normal courses. Three colleges for men and for both sexes reported 34 professors and instructors, 321 preparatory, collegiate, and graduate students, and a total income of \$41,642, and 1 school of technology reported 19 professors and instructors, 225 preparatory and collegiate students, and a total income of \$54,000. No professional schools were reported.

Population.—The population, according to the United States census, was 132,159 in 1890, and 243,329 in 1900—an increase for the decade of 111,170, or 84.1 per cent. The three largest cities, with population in 1900, are: Butte, 30,470; Great Falls, 14,930; and Helena, 10,770.

Clark and the Montana Senatorship.—The long-drawn-out battle between William A. Clark and Marcus Daly for political supremacy in the State of Montana assumed national importance in 1900. Messrs. Clark and Daly, millionaire mine-owners, were friends and business associates many years ago. A dispute over some mutually owned property resulted, by decision of the court, in the payment to Mr. Clark of nearly \$250,000. Thereupon war was declared between them. In 1893 Mr. Clark was the caucus nominee for senator of the Democratic party, which held a majority in the Legislature. But Mr. Daly brought about a legislative deadlock, and Mr. Clark lost the seat. The next subject of contention was whether Helena or Anaconda should be the State capital. Both parties spent large sums of money to influence the result, and Mr. Clark finally won for Helena. When, in 1899, Mr. Clark was elected to the United States Senate by the State Legislature, Mr. Daly gathered together a cloud of witnesses to prove before the Senate Committee on Elections and Privileges that Mr. Clark had obtained his seat illegitimately and by extensive bribe-giving. The testimony produced was voluminous in quantity and of a highly sensational quality. It was claimed by the Daly faction that in a State which had only 50,000 voters Mr. Clark had spent \$400,000 on his election. One member of the Legislature stated that he had been offered \$30,000 for his vote. Mr. Clark himself admitted that he had spent about \$139,000 on election expenses and had not rendered an account of this expenditure as required by the Montana law. He claimed, however, that the peculiar conditions in Montana rendered the expenditure necessary, and that no money had been used to influence the election. One of

the judges of the Montana Supreme Court testified that his physician, a friend of Mr. Clark, had offered on two occasions to find for the judge \$100,000 if he would dismiss the disbarment case against Mr. Wellcome, Mr. Clark's attorney, or if he would resign from the bench before the case was tried. The physician testified that he had so offered the judge—excepting that the amount was \$50,000—but that the offer was merely by way of a joke to test the judge's probity. Several business transactions of a doubtful nature were brought to light during the taking of evidence. Among these were the purchase of property from Representative McLaughlin, the offer to Representative Woods of money to satisfy the mortgage on his ranch and the subsequent purchase of the ranch, the purchase of property from Senator Warner, and the establishment of a bank after the adjournment of the Legislature. Reference was made also to a check for \$5000, sent by Mr. Clark to E. C. Day, the leader of the Clark forces in the Legislature. Mr. Clark stated that this check was a testimonial of his friendship and good-will, and in no wise a payment for services rendered. On April 24 the committee made a unanimous report to the Senate, stating that the election of Mr. Clark was "null and void, on account of briberies, attempted briberies and corrupt practices by his agents, and of violation of the laws of Montana defining and punishing crimes against the elective franchise." The committee recommended that the Senate adopt the resolution that Mr. Clark "was not duly and legally elected to a seat in the Senate." It is stated in the report, from portions of which a minority of the committee dissented, though all acquiesced in the conclusions: (1) By the Montana law of 1895 a candidate for the United States Senate could not give more than \$1000 to any one committee in one county, or spend more than \$1000 for his personal expenses, in lawful ways therein specified. That law was violated. (2) In the summer of 1898 a committee was organized in Mr. Clark's interests, to whom he agreed to furnish an unlimited amount of money. To this committee and to his agents Mr. Clark admitted to have paid \$139,000. (3) "None of the members of his committee or their assistants made the sworn returns (as to their expenditure) required by law, nor did Senator Clark himself make any return." (4) Admitted and undisputed facts connected with Mr. Clark's expenditures and business dealings justify the committee in reporting adversely to his claims. There are in addition disputed facts, such as the alleged attempt to bribe a judge of the Supreme Court of Montana. A majority of the committee believes that such an attempt was made. (5) A change in eight votes was necessary to change the result of the election. More than this number was found to have been obtained by illegal and corrupt practices. (6) It is not necessary to prove that Mr. Clark was party to illegal and corrupt practices: proof that such practices were indulged in by his agents and friends, in his behalf, is sufficient to invalidate his claims to a seat in the Senate. On May 15 Mr. Clark, in an address to the Senate, reviewed the report of the Committee on Elections and Privileges. He asserted that in investigations of a similar character it had been previously held by the Senate that it must be affirmatively proved that the principal had actual knowledge of fraud practised by his agents; but that in the present case the Senate committee, while reporting against his claims, had made no charge of complicity against him. Mr. Clark contended that the testimony offered to the committee had not been subjected to common law rules of evidence; that irrelevant, malicious, and perjured testimony had been accepted, and that he had not been allowed to object or reply thereto. In reference to the known difference in financial standing of certain Montana legislators before and after the legislative session Mr. Clark stated that important State measures, in which he was not interested, had come up for decision, and that it was quite as reasonable to suspect the backers or opponents of those measures as himself, and in any case inference was not proof. Mr. Clark went at length into the condition of Montana politics, and said that under the unnatural despotism which Mr. Daly had wrought the expenditure of large sums of money was necessary in any attempt to rid the State of his rule. In closing Mr. Clark submitted to the Senate a copy of the letter which he had sent to the governor of Montana, under date of the 11th of May, resigning his seat in the Senate. By direction of Senator Frye, Mr. Clark's name was thereupon struck from the roll of the Senate. The temperance and acumen of Mr. Clark's speech and the good taste of his resignation produced a reactionary impulse in his favor, both in the Senate and in the country at large. Great surprise was expressed, therefore, when it was learned that Acting Governor Spriggs of Montana had immediately appointed Mr. Clark to fill the vacancy in the United States Senate caused by his resignation. Governor Smith, an opponent of Mr. Clark and one of the remonstrants to his seating in the Senate, had, it appeared, gone to California on business. Lieutenant-Governor Spriggs, who had previously announced that he would at that time attend the Populist convention at Sioux Falls, S. Dak., had thereupon returned to Helena during the governor's absence and signed and despatched Mr. Clark's appointment. His authority for this was clearly given him by a clause in the Montana constitution, which provides that: "In case of

his (the governor's) absence from the State, the powers, duties, and emoluments of the office . . . shall devolve upon the lieutenant-governor." On May 18 Governor Smith, who had returned post-haste to Montana, appointed Martin Maginnis to the Senate on the ground that Mr. Clark's appointment was invalid, since collusion and fraud had been employed to get the governor out of the State, and the whole matter was a preconceived plot.

In confirmation of this charge Governor Smith stated that Mr. Clark's letter of resignation was written in April, and that examination of the paper showed that the date of May 11, which the document bore, was subsequently written in after erasure of the original date. He declared further that Mr. Clark's son, Charles A. Clark, had the resignation in his keeping, pending the time that the governor left the State. On presentation to the Senate, the credentials of Mr. Clark and of Mr. Maginnis were referred to the Committee on Elections and Privileges, and the matter went over to the next session. The questions created by Mr. Clark's *coup d' état* are of much interest and some complexity. They are in brief as follows:

(1) Is the vacancy caused by Mr. Clark's resignation to be dated from the time of this resignation, or (2) can the Senate, by passing a resolution declaring that Mr. Clark's election was, on account of his electioneering methods, null and void *ab initio*, throw back the date of the vacancy to the time when the term of his predecessor expired? (3) If the vacancy is to be dated from the time of Mr. Clark's resignation only, then that vacancy having actually happened and occurred during a recess of the Legislature, the governor of Montana or one legally acting in his place was clearly entitled to appoint a senator to fill the vacancy in Montana's representation. In that case can Governor Smith's contention of fraud and collusion in the appointment of Mr. Clark be sustained, and if not, can the Senate avoid accepting Mr. Clark as senator, except by a two-thirds and arbitrary vote of expulsion? (4) If, on the other hand, the vacancy in Montana's representation is to be ascribed to the failure of the Legislature of that State to legally elect a senator, then, in accordance with the decision recently rendered in the Quay case and in accordance with an unbroken line of precedents, neither the governor nor his legal representative in Montana was entitled to appoint a senator, the vacancy having occurred during a session of the Legislature and through the inability of the Legislature to exercise its proper functions. And in that case does not the vacancy in Montana's senatorial representation continue until the next State Legislature fills that vacancy by election?

Constitutional Amendment.—A constitutional amendment was adopted at the elections held in November providing that in case of the disqualification of justices of the Supreme Court district judges may qualify to act in their place.

Elections.—In the State election of 1900 the Democratic nominee for governor, J. K. Toole, defeated Folsom, his Republican opponent, by a plurality of approximately 9000. The entire Democratic ticket was elected with varying pluralities, of which the smallest were those of 4000 for attorney-general and of 97 for superintendent of public instruction. Caldwell Edwards (Dem.) was nominated and elected to the 57th Congress in place of A. J. Campbell (Dem.), who had served in the 56th Congress. The Montana Legislature in 1900 consisted, in the Senate, of 9 Republicans, 11 Democrats and 3 Populists, and in the House of 7 Republicans, 40 Democrats and 21 Populists. It is stated that the Legislature in 1901 will consist, in the Senate, of 8 Republicans, 12 Democrats and 1 Populist, and in the House of 23 Republicans, 46 Democrats and 1 Populist. In the national election Bryan received 37,146 votes and McKinley 25,373. In 1896 Bryan received 42,537 votes and McKinley 10,494. Bryan's plurality was thus reduced from 32,043 to 11,773.

State Officers and National Representatives.—State officers for 1900: Executive—governor, R. B. Smith; lieutenant-governor, A. E. Spriggs; secretary of state, T. S. Hogan; treasurer, T. E. Collins; auditor, T. W. Poindexter, Jr.; attorney-general, C. B. Nolan; adjutant-general, F. C. English; superintendent of education, E. A. Carleton; commissioner of agriculture, J. H. Calderhead—all elected on a Democratic-Populist ticket except English (Rep.), appointed by the governor.

Supreme Court: Chief justice, Theodore Brantley (Rep.); associate justices, W. H. Hunt (Rep.), W. T. Piggott (Dem.); clerk, H. G. Rickerts (Dem.).

State officers for 1901: Executive—governor, J. K. Toole; lieutenant-governor, F. G. Higgins; secretary of state, G. M. Hays; treasurer, A. H. Barrett; auditor, J. H. Calderhead; attorney-general, James Donovan; superintendent of education, W. W. Welch—all Fusion Democrats.

Supreme Court: Same as for 1900 except that G. R. Milburn (Dem.) replaces W. H. Hunt.

Congressional representative for 1900 (56th Congress): A. J. Campbell (Dem.).

Congressional representative for 1901 (57th Congress): Caldwell Edwards (Pop.), from Bozeman.

Senators for 1900 (56th Congress): Thomas H. Carter (until 1901) and W. A. Clark (until 1905, by the lieutenant-governor's appointment).

Senators for 1901 (57th Congress): W. A. Clark; one vacancy.

MONTENEGRO, a principality of southern Europe, situated at the northwestern part of the Balkan peninsula, between Bosnia and Albania. It has an area of about 3630 square miles, and its population, according to the census of 1896, was 227,841, including about 500 foreigners. The Montenegrins belong to the Serbian branch of the Slav race, and mostly profess the creed of the Greek Orthodox Church. The capital is Cetinje, with a population of 2920, and the most important towns are Podgoritz, 6534; Dulcigno, 5000, and Niksic, 3530. The Montenegrins are mainly an agricultural people, and the trade is mostly in the hands of the Albanians from Skutari. The surface of the country is for the most part mountainous and unfit for cultivation, with the exception of the northeastern part, where agriculture is carried on in a very primitive fashion. The principal agricultural products are maize, wheat, olives, tobacco, and grapes. There are large tracts of forests well supplied with valuable woods, but their inaccessibility makes them almost valueless. Cattle raising is carried on to a considerable extent. The trade of Montenegro is insignificant. The imports for 1898 were estimated at nearly \$300,000, and the exports at \$250,000. The sale of salt and petroleum is a government monopoly. The revenue of the principality is derived from taxes on land and cattle and from the salt and petroleum monopolies, amounting in 1899 to about \$500,000. School attendance is obligatory, and the schools are free. There is a theological seminary and a college for boys at Cetinje, supported by the Russian empress. The government is patriarchal, and the executive authority is vested in the reigning prince, Nicholas I., who is assisted by a legislative council of eight members, half of whom are nominated by the prince and the other half chosen by that part of the population capable of bearing arms. There is practically no standing army, except a battalion of 800 men stationed at Cetinje and changed every four months. Every male Montenegrin receives a more or less military training, and it is estimated that an army of over 36,000 trained men can be put in service at the shortest notice. Montenegro has no navy, and her ports are closed to foreign warships, the coasts being protected by the treaty of Berlin. For administrative purposes the population is divided into 40 tribes, each governed by elected elders and a chief, who performs the functions of a judge in time of peace and of a commander in time of war. There is a supreme court at Cetinje and district courts in several towns, and in some cases the prince himself is appealed to for a decision. The principality has no currency of its own, and the Austrian paper is mostly used, although English and French gold, as well as Turkish silver, also circulate to a certain extent. There are 18 post-offices in Montenegro and 400 miles of telegraph wire, with 20 offices.

MONTGOMERY CONFERENCE. See ALABAMA.

MONTSERRAT. See LEEWARD ISLANDS.

MORAVIAN CHURCH, or UNITAS FRATRUM, divided into three provinces—one on the continent of Europe, one in Great Britain, and one in the United States; but constituting an organic whole. In this country the Moravians first settled in Georgia and afterward emigrated to Pennsylvania, where their greatest strength is centred. The general synod, at which the provinces and missions as far as possible are represented, meets every 10 years; in the interval synods are held in the various provinces. The province of the United States reports for 1900, 111 churches, 118 ministers, and 14,817 communicants, an increase in membership of 25 per cent. during the last decade. Extensive foreign mission work, begun in 1732, is carried on by the whole church; it controls 5 educational institutions in the United States, and has a limited periodical literature, published both in English and German. The church contributions during the past year amounted to \$104,381.49, of which \$22,988.79 was devoted to foreign and home missions. Perhaps the most interesting phase of Moravian mission work is their leper home at Jerusalem. This institution, established about 30 years ago, supports 50 inmates, who are ministered to by a half dozen devoted missionaries and nurses. It is to be regretted that the receipts of the home do not meet the moderate expenditure of \$6000 a year.

MORGAN, JOHN PIERPONT, a New York banker and financier, has occupied a prominent position during the year 1900, owing to his connection with the reorganization and consolidation of railroad and various industrial enterprises. Mr. Morgan was born at Hartford, Conn., April 17, 1837, and was educated at the English High School, in Boston, and at the University of Göttingen, in Germany. In 1871 he joined the firm of Drexel, Morgan & Company, bankers, which later became J. P. Morgan & Company. Mr. Morgan negotiated the bond issues of the Cleveland administration with remarkable success at a time of great financial depression throughout the country. Mr. Morgan has purchased, reorganized, or consolidated many railroads, notable among which were the West Shore and the Philadelphia & Reading. During 1900 he was active in coal properties, and purchased the Pennsylvania Coal Company in the interests of the Erie Railroad, an event of considerable importance, as it acted to prevent ruinous competition among the coal-

mining companies and the coal railways. Under the influence of Mr. Morgan's firm an agreement between the coal producers was reached, and he was instrumental in bringing about a settlement of the anthracite miners' strike in September, 1900. In December, 1900, at a meeting of prominent railway men, representing several of the trunk lines, Mr. Morgan was appointed on a committee formed to reach a general *ex-officio* traffic agreement and to prevent the cutting of railroad rates and ruinous competition. Other industrial enterprises of vast magnitude are in Mr. Morgan's hands, and he is conceded to be the ablest financier in America.

MORMONS or LATTER DAY SAINTS, the *Church of Jesus Christ of Latter-day Saints*, organized in 1830 at Fayette, N. Y., by Joseph Smith, who became the prophet of Mormonism. A vision, which designated him the founder of a new faith, revealed to him the Book of Mormon, a legendary history of America, accepted by the new sect as a supplement to the Scriptures and of equal weight with them. A movement westward was soon begun, and after persecution in various States a final settlement was made on Great Salt Lake, their present headquarters. Missionaries are now sent to all parts of the world, and there is reason to believe that the sect is increasing, though there have been no accurate statistics for some years. The last estimates for this country, made in 1898, assign them 1700 ministers, 796 churches, and 300,000 church-members. A striking characteristic of the Mormons is their religious enthusiasm and missionary zeal. These traits, expressed through a complete and well-directed organization, may to some extent account for their prominence.

Reorganized Church of Jesus Christ of Latter-day Saints, founded by participants in the Josephite schism at the death of Joseph Smith. Under the leadership of the son of the prophet they repudiated polygamy, questioning the genuineness of its revelation by Brigham Young in 1852, but accepted the Book of Mormon as of divine origin. This sect, with its head at Lamoni, Ia., outlines its church government on the Apostolic Church, and now includes 600 churches, with 2200 ministers and 45,500 members.

MOROCCO, a Mohammedan empire, occupying the northwestern corner of Africa, on the Mediterranean Sea and Atlantic Ocean. The seat of government or residence of the sultan is alternately at Fez, Morocco City, and Mequinez.

Area and Population.—As the frontiers toward southern Algeria and the Sahara are undefined, the area of Morocco cannot be estimated with any degree of accuracy, though the figure usually accepted is 219,000 square miles. The population, which comprises Arabs, Berbers, Tuaregs, negroes, some Jews, and a few Christians (most of the last named being in Tangier), has been variously estimated at from 2,500,000 to 9,400,000; 4,000,000 is, perhaps, most nearly correct.

Government, etc.—The government is an absolute despotism, the sultan being the irresponsible head of both civil and religious law. Unlike the Sultan of Turkey and other Mohammedan rulers, he is not restricted by the expounders of the Koran. He is assisted by six ministers, who have no executive authority beyond what he chooses to give them. Mulai-Abd-el-Aziz, however, the present sultan, who succeeded to the throne in 1894, when he was about 14 years of age, was practically dominated by Sid Ahmed Ben Musa, the grand vizier, until the latter's death in 1900. The regular army comprises about 10,000 infantry and 400 cavalry; besides some 2000 irregular cavalry, there are in different parts of the country about 18,000 militia, infantry, and cavalry, while in addition to these the urgency of war could call forth about 40,000 foot and horse. The annual imperial revenue, which is derived largely from monopolies, taxes, and extortions, is estimated at about \$2,400,000.

Industries and Commerce.—Agriculture is in a backward condition, and the mineral resources of the country are little developed. The principal manufactured articles are slippers and carpets, and these to some extent are exported. The leading exported products include beans, cattle, wool, goat-skins, eggs, and wax; other products are maize, pease, almonds, dates, and other fruits, wheat, barley, esparto, hemp, and bird-seed. Among the principal imports are cotton goods and other textiles, sugar and provisions, iron goods and other hardware, candles, and alcoholic liquors. The imports in 1897 amounted to \$6,797,656; in 1898, \$5,680,797. The exports for these years amounted to \$5,421,386 and \$5,650,000 respectively. In the latter year about 59 per cent. of the imports came from Great Britain, 22 per cent. from France, and nearly 9 per cent. from Germany; about 29 per cent. of the exports went to Great Britain, 28 per cent. to France, and 17 per cent. to Germany. The vessels entering at the ports in 1898 numbered 2089, and aggregated 997,749 tons.

Political Conditions.—The grand vizier, Sid Ahmed Ben Musa, "the most feared and detested man in the country," who for six years had practically ruled the empire in the name of the young sultan, died in the city of Morocco May 13, 1900.

Ahmed, who was regarded as a successful diplomat, kept Morocco free from the foreign "influence" that so often culminates in a protectorate or even in annexation. The removal of this strong force from the Moorish government suggests the well-known desire of France to extend her dominions along the Mediterranean from Algeria to the Atlantic. Not only has Great Britain stood against such action, as in some degree it would neutralize her command of the Mediterranean at Gibraltar, but other nations, including Spain, Italy, Portugal, and Germany, have opposed it, since in the event of French occupation there is little doubt that the Moorish ports would be practically closed to all but French trade. In the summer of 1900 it was reported that Great Britain was probably not inclined to risk serious trouble with France over the Moorish question, provided she could preserve the independence or neutrality of the African coast opposite Gibraltar, and thus keep unimpaired the strategic value of her Mediterranean position.

The Moorish government is jealous of the growing French influence along the undefined southern boundary of the country. On December 28, 1899, an expedition, under M. Flamant, which was said to be for scientific purposes, but which had a military escort, came into conflict with the inhabitants of Insalah, an oasis lying some three hundred miles south of El Golea, the southernmost of the French military stations, on the Algerian frontier. The natives were defeated, Insalah was occupied, and apparently the important oasis of Twat came under French influence. The Twat region is one of the principal centres of Saharan trade. On March 19, 1900, a force of Kessurians, who were threatening the French at Insalah, was attacked and defeated at Ingher, and the town was occupied. A local chieftain, known as the pasha of Timmi, or the governor of Twat, was taken prisoner. On April 5 the French occupied Igli, a town commanding the caravan route between the more southerly oasis and Morocco. The Moorish government looked with such disfavor upon these encroachments, regarding them as violations of the treaty of 1845, that on June 20 the sultan, through Hadji Mahomed el Torres, the minister for foreign affairs at Tangier, addressed a protest to the Powers. In July the French premier stated that the alleged encroachments had been made wholly within French territory. A dispute also arose over French railway construction south of Ain-Sefra. Though there seems to be no definite boundary demarcation here, the sultan bases his claim to the territory on the fact that hitherto he has suffered no interference in the appointment of its officials. Further trouble was reported in August, when Moorish troops were massing along the frontier of Algeria and tribesmen were raiding territory claimed by that country. Up to the close of the year the situation appeared to be threatening. In an article in *Blackwood's Magazine* for July, 1900, written at Tangier on the 5th of the preceding month, Mr. Walter B. Harris, an authority on Morocco, scouted the idea that France wished to subjugate and annex the country. Mr. Harris holds that the group of oases known as Twat and Igli properly belong to the Algerian hinterland. Separated from Morocco by many miles of desert, they were of no advantage to that country, but to France they were a serious menace, as the bands of marauders, who from the security of these oases have been accustomed to sally forth and raid Algerian caravans, would transfer their disagreeable attentions to the proposed French Sahara railway. (See AFRICA, paragraph French Possessions.)

Trouble with the United States was threatened in the fall of 1900, when that country demanded of the sultan an indemnity of \$5000 for the murder of Marcus Essagin, a naturalized American citizen, who had been burned to death by a mob at Fez. At first the Moorish government refused to honor the American claim, but on December 18 the United States consul at Tangier reported its settlement. It was also reported that Morocco had agreed to pay certain German claims amounting to about \$46,000.

MORPHOLOGY. See ZOOLOGICAL LITERATURE (paragraphs Text-books and Zoological Societies).

MORRISON, GEORGE ERNEST, M.D., has been a correspondent at Peking for the London *Times* since 1897, and was wrongly reported a victim of the disorders in July, 1900. His letters have given full and accurate information, and have been regarded as authoritative on Chinese affairs. Dr. Morrison was born at Geelong, Victoria, in 1862, studied at Melbourne University, and took his medical degree from the University of Edinburgh in 1895. He is also known as a traveller. In 1882 he shipped as an ordinary seaman on a voyage to the South Sea Islands to study the slave traffic there, and his accounts published in the *Melbourne Age* stirred the authorities to action. Soon after he made his famous walking tour across Australia from Normanston, in the north, to his home in Victoria. In 1883 he was in New Guinea, where he was speared by the natives. In 1894 Dr. Morrison crossed overland from Shanghai to the Burmese frontier, and wrote a most interesting account of the journey in his book, *An Australian in China*. Two years later, at a time when France and

England were disputing over some regions in the Mekong, he journeyed through Siam, and first wrote some of his graphic letters for the London *Times*. Since he has been resident correspondent at Peking he has undertaken some important travels in China and Siberia.

MULHALL, MICHAEL G., a British writer on statistical subjects, died December 13, 1900, at the age of 64. He was educated at the Irish College in Rome. The Buenos Ayres *Standard*, the first English daily paper printed in South America, was founded by him in 1861. For the last twenty years he has been a constant contributor to the *Contemporary Review* and Section F of the British Association for the Advancement of Science. His principal works are: *The Progress of the World* (1880); the *Dictionary of Statistics* (1886), and the *Industries and Wealth of Nations* (1896).

MÜLLER, FRIEDRICH MAX, LL.D., D.C.L., the well-known Sanskrit scholar, died at Oxford, England, October 28, 1900. He was born at Dessau, Germany, in 1823, the son of Wilhelm Müller, a German poet of considerable renown. He commenced the study of the Sanskrit language and literature under Brockhaus at Leipzig, and subsequently continued his work under Bopp and Schelling in Berlin, and under Eugène Burnouf in Paris. The first work of importance, which he undertook at the suggestion of Burnouf, was a translation of the *Rig Veda*. The preparation of this work necessitated his first visit to England in 1846, where, aided by his influential friend, Baron Bunsen, he succeeded in inducing the East India Company to assume the expense of publication in view of the important bearing of the book on the language, history, and religion of the great body of British subjects in India. In 1848 he established himself at Oxford, and in the following year appeared the first volume of his *Rig Veda*. In 1850 Müller was appointed deputy Taylorian professor of modern languages; four years later he succeeded to the professorship, and in 1858 he was elected a fellow of All Souls. From 1865 to 1867 he was Oriental librarian, and the following year became first professor of comparative philology at Oxford. In 1870 he gave a course of lectures on the science of religion before the Royal Institution, and in 1873 on "Darwin's Philosophy of Language." In 1875 he resigned his professorship, but remained at Oxford, where he began his edition of a series of translations of the *Sacred Books of the East*. He received honors and degrees from the various scientific societies of Europe. He was one of the thirty knights of the *Ordre pour le Mérite*, and Cambridge made him Doctor of Law and of Philosophy. In 1896 he was made a member of the British Privy Council.

Müller's works include: *Rig Veda Sanhita* (6 vols., 1840-73; 2d ed., 4 vols., 1889-92); *Sacred Books of the East* (41 vols., 1876-93); *Hitopadesa, Text with Interlinear Transliteration, Grammatical Analysis and English Translation* (1866); *Buddhist Texts from Japan* (1881-85); *History of the Ancient Sanskrit Literature* (2d ed., 1859); *India, What Can it Teach Us?* (1853); an English translation of Kant's *Critique of Pure Reason* (1881); *Introduction to the Science of Religion* (1870); *On the Origin and Growth of Religion*, Hibbert Lectures (1878; new ed., 1882); *Chips from a German Workshop* (4 vols., 1867-75); *Selected Essays on Language, Mythology, and Religion* (2 vols., 1881); *Lectures on the Science of Language* (rewritten 1891); *The Science of Thought* (1887), an exposition of his ideas on the science of philology; Gifford Lectures: (a) *Natural Religion* (1890); (b) *Physical Religion* (1891); *Deutsche Liebe* (ed. 9, 1889), a story which has been translated into several languages.

Müller's thoughtful and conscientious work in the field of Sanskrit literature had the effect of imparting a powerful impulse to research, while books like his *History of Ancient Sanskrit Literature* are still to be counted among the most scholarly and original publications in that field. His general ideas, however, on the philosophy of language won him much wider popularity than the more positive work in Sanskrit, and this in spite of the fact that the scientific world has found it impossible to accept many of his strange etymologies and theoretical deductions.

Müller classes comparative philology with the exact sciences. In framing his ingenious exposition of the *Science of Language* (published first in 1861), the subject of which is the nature, origin, and development of human speech, he endeavors to show that, like any of the physical sciences, comparative philology has evolved by passing through the empirical and classificatory stages into a branch of philosophy whose general laws are as definite and invariable as the empirical laws of physics and chemistry. Müller's views, applied to the Aryan languages, have brought about the dissemination of a somewhat exaggerated idea of the close blood-relationship of peoples far removed from one another geographically. Certain etymological relations between the Sanskrit language, on the one hand, and the Greek, Latin, Iranian, and German languages, on the other, had already been established; and from Müller's theories it followed that the people that spoke these kindred languages

must be derived from one common stock, and, therefore, from separated branches of one family, the so-called Aryan race. Many phenomena in the intellectual development of that and of other races Müller endeavored to explain by the psychological influence of forms of language. According to him, articulate sound is by no means something separate and distinct from the idea which it expresses; the word is the sound picture of the thought—it is "thought incarnate." On this principle he imagines mythology, which he calls "a disease or affection of language," as having originated in something like the following process: In the primitive state of man names of animate objects were formed with different terminations, corresponding to the different sexes; when new words were subsequently created to designate inanimate objects masculine or feminine terminations were applied to them, merely by analogy to the older words; but in course of time this difference in the form of words caused the actual application of the idea of sex to inanimate objects, which fancy further endowed with the capacity of thinking and acting, and thus the myth was born. The explanation, though simple and attractive, is not, however, correct. According to views following from modern investigations on the subject, exactly the reverse is the case: the belief preceded the gender termination, and not the gender termination the belief. Nevertheless, to the end of his life Müller adhered to his theories in this as in other instances. In 1881, twenty-two years after the publication of the *Origin of Species*, he persisted in thinking that human speech, though subject to continuous development, had its origin in a sort of miracle; that "the gift of language belonged to man from the very first," and that "the idea of a humanity emerging from the depths of animal brutality can never be maintained."

While, therefore, a considerable portion of Müller's work does not stand the test of rigid scientific criticism, it is, nevertheless, universally admitted that few are as deeply versed in the Sanskrit lore as he was. Besides, his poetic imagination and his happy use of words and illustrations, giving clearness and coloring to his style, certainly entitled him to a high rank among the famous popularizers of scientific thought.

MUNICIPAL BATH-HOUSES. During 1900 the number of municipal bath-houses in London was increased by the erection of baths in Fulham, Poplar, Bethnal Green, Millnall, Shoreditch, and St. Pancras. Most of these contain provision for both tub and shower-baths, swimming pools, and a laundry department. At Deal, England, two underground bath-houses and water-closets combined in a somewhat novel pattern were completed in October, 1900. The first is placed in the centre of the street, and is in the form of an ellipse, being fenced around and planted with shrubs and flowers. It has six water-closets, six circular, glazed urinals, two tub baths, with hot and cold water, a lavatory with two basins, and an attendant's room. It is thoroughly sanitary in its construction, and cost less than \$5000. The second is on much the same plan, except that it is roofed and lighted with pavement glass. This plan of constructing underground toilet stations in the centre of the street was recommended in the report of a committee appointed by the mayor of New York in 1897 for that city. Incidentally, the entrance to such conveniences would form a place of refuge for foot passengers while crossing crowded thoroughfares. Under the provisions of a legislative act several municipal bath-houses have been constructed or designed in New York State in the past few years. In 1895 a law was passed making it mandatory on all cities of the first and second class or those having more than 50,000 inhabitants to establish such number of free public baths as the local Board of Health may deem necessary. Each bath is to be open the year around not less than fourteen hours a day, and provided with hot and cold water. The maintenance of ocean or river baths does not satisfy the requirements of this section of the act. It is also provided that smaller cities and villages may maintain free public baths and may make loans or use their funds for this purpose. This act is probably the first general legislation on this subject to be enacted by an American State. Buffalo was the first city to avail itself of the privileges of this law, and in 1897 put in operation a bath-house, costing \$14,800, which has proved extremely popular. In 1900 a second bath-house was constructed. New York, Troy, Albany, Rochester, and Syracuse either have completed or are constructing city baths. The most elaborate structure is the Rivington Street Bath-house in New York, which cost \$100,000, and was made ready for use early in 1900. It is located in one of the poorest and most crowded sections of the city, and has a capacity of 3000 baths a day. The city of Newark has two municipal bath-houses, one erected in 1895 and the other in 1897, and money for a third was appropriated in 1900. The baths are very popular, having been patronized by 327,526 males and 45,017 females up to December 1, 1900. Several swimming clubs for both men and women are maintained, which at stated times have the use of the pools. The baths are free, but there is a charge for suits and towels. In at least two cities in America—Boston and New York—bathing facilities have been provided in public schools with good results. The Paul Revere School of Boston and Public School No. 1 in New York

have bathrooms, and it is proposed to extend the system. The plan originated in the German town of Göttingen, where in 1885 shower-baths were put into the schools, and their use made compulsory. The movement has many warm advocates, and in certain localities has much to commend it. That children should be taught the importance of personal cleanliness is essential to good citizenship, being the root of many civic virtues. Besides, the most elaborate and scientific methods of ventilation will not secure pure air in school-rooms until bodily cleanliness is the rule.

MUNICIPAL GOVERNMENT. The present article is intended to reflect to some extent the discussions which have taken place during the year on municipal government, and also to indicate various tendencies in municipal government which are exemplified by actual recorded legislation of judicial decisions.

Extension of Municipal Control.—The increasing tendency of cities to extend the control of their government over public utilities, and, in fact, to nearly all matters of common importance to their citizens, was well illustrated in an article by Mr. Clinton Rogers Woodruff in November, 1900. If, in 1800, said Mr. Woodruff, "an American city provided for paving the streets and cleaning them of the grosser and fouler impurities; for a few night watchmen and a handful of constables; for cleansing and repairing the sewers and docks and for lighting the streets with miserable oil-lamps, the 'fathers' thought that they were performing their whole duty to the inhabitants." At the present time, according to a recent authority, the courts have decided that the following are among the proper objects of municipal interest, control, and ownership: "Roads, bridges, sidewalks, sewers, ferries, markets, scales, wharves, canals, parks, baths, schools, libraries, museums, hospitals, lodging-houses, poorhouses, jails, cemeteries, prevention of fire, supply of water, gas, electricity, heat, power, transportation, telegraph and telephone service, clocks, skating rinks, musical entertainments, exhibitions of fire-works, tobacco warehouses, employment offices." But that these extensions of the functions of city government necessitate an enormous increase in expense is shown by a comparison of the budget of Philadelphia for the years 1800 and 1899. In 1800 the population of Philadelphia was stated to be 70,287, and the cost of government was \$68,480.92, which equalled a per capita tax of 97 cents. In 1899 the population approximated 1,115,000, the budget was \$30,958,382.88, and the per capita expense was therefore \$27.76. To take up one or two of the items of these budgets in detail: In 1899 there were 2191 policemen in Philadelphia, and the cost of the department was \$2,732,483.31. There was also appropriated for electric lighting \$1,118,017.78, and for gasoline lighting, \$279,930. In 1800 the total appropriation for "watching and lighting" the city was \$18,156. In 1899 the appropriation for the fire department was \$979,501.20; in 1800 there were only volunteer firemen. In 1897 there were 433 public schools and 3465 teachers in Philadelphia. In 1800 there was no appropriation for this purpose, because there were no public schools.

Power of Police to Regulate Vice.—On May 14, 1900, the Supreme Court (United States) handed down a decision affirming the rights of the Municipal Council and police of New Orleans to regulate vice in that city. The case arose from ordinances approved by the City Council in January and July, 1897, prohibiting abandoned women from residing or following their calling in certain specified sections of the city, though not authorizing them to dwell in any section. Various taxpayers and also the Church Extension Society of the Methodist Episcopal Church thereupon brought suit against the city, first in the courts of Louisiana and later in the Supreme Court, on the ground that the effect of the ordinances was to introduce vice to an alarming extent into those sections of the city not specifically protected by the ordinances, and that as a result the plaintiffs were greatly injured by depreciation in the value of their property and in other ways, and that this injury was without due process of law and was unconstitutional. To this complaint the city of New Orleans answered that the ordinances in question had been legally passed under the power given to the city by an act of the Legislature in 1896 providing for "the government and administration of the city," and authorizing the council, among other things, "to regulate houses of prostitution . . . and to close such houses from certain limits." The court held in its decision that the management of the difficult social problem presented in the case belonged legitimately to the police power reserved to the States. But if the police had power to limit vice they must also, and as part of that power, have the right to limit it territorially. Moreover, vice was not protected in any locality by the ordinances, the ordinary legal methods for abating nuisances remained open to the plaintiffs, and if injury still resulted from the proper exercise of the police power it was inferential and indirect, and could not be made cause for interference by the federal judiciary.

New Orleans—Telephone Monopoly.—An instance of the difficulty of preventing "competing" public service corporations from acquiring monopoly by agreement was furnished early in 1900 by two New Orleans telephone companies. The first company, established two years before, had charged rates which were considered exces-

sive. Therefore, a second company was able to obtain a charter from the City Council, on the understanding that its charges should not exceed \$36 a year for residential service and \$48 a year for office service, and on the further understanding that it would not "sell out to or be absorbed by any other company without the consent of the City Council." The first company cut its rates to meet those established by its later rival, and both companies furnished prompt and efficient service. Presently, however, it transpired that the stock of the second company had been bought up by stockholders of the first company *acting as individuals*. The second company was then allowed by its officers to run down with the purpose of forcing its customers into the first company. Coincidentally with this came an announcement from the first company that on and after April 1 its old rates for service would be restored. The State Telephone Commission then took the matter up, and by the power delegated to it by the recent State constitution forbade the raising of the rates until its consent had been obtained. In the meantime a third telephone company applied for a charter, offering as a guarantee of good faith and as surety that it would not be bought up by any other concern, acting collectively or as individuals, that for certain specified reasons 51 per cent. of its stock should remain on deposit with the mayor of the city.

San Francisco Charter—Public Utilities.—Much interest has been expressed in the new San Francisco charter, adopted in 1899, on account of the provisions which it makes for the acquisition by the city of all public utilities, and because of the steps taken thereunder in 1900 for the municipal ownership of the water supply. (See CALIFORNIA, paragraph San Francisco Water Supply.) The principal sections of this part of the charter are as follows: 1. It is the declared intention of the people to gradually acquire and ultimately own the public utilities of the city and county. 2. Within one year from the time the charter goes into effect and every two years thereafter, until all public utilities are acquired and owned by the city and county, the supervisors must procure estimates of the cost of construction of water-works, gas-works, electric-light works, telephone lines, street railroads, and such other public utilities as the supervisors may determine or as the people may elect by petition to the supervisors. 3. After the estimates have been procured, the supervisors must enter into negotiations for the purchase or construction of the public utilities they deem of most immediate importance to the city, and the result of these negotiations must be submitted in the form of a definite proposition to the electors of the city and county at a special election to be held for that purpose. 4. Whenever a petition, signed by electors equal in number to 15 per cent. of the voters at the last election is presented to the supervisors requesting them to enter into negotiations for the acquisition of any particular public utility, the supervisors must undertake the negotiations requested, and must submit to the electors an election proposition thereon. In such case the mayor also may submit a proposition to the electors bearing upon the acquisition of this public utility. 5. If the cost of any desired public utility renders necessary an issue of municipal bonds, the supervisors, in submitting propositions, must specify the amount of the proposed issue and the rate of interest thereon, and at least a two-thirds vote of the electors shall be required to authorize the issue of such bonds; and not less than one-fortieth of the total amount of any bond issue so authorized must be paid each and every year. 6. No indebtedness for the acquisition of any public utility may be incurred if that indebtedness, together with the existing bonded indebtedness of the city and county, exceeds at any one time 15 per cent. of the assessed value of all real and personal property in the city and county.

Municipal Debt Limit.—The wisdom of laying down a hard-and-fast debt limit, beyond which municipalities cannot incur debt, except, perhaps, for additional water supplies, has been much questioned of late. This has resulted from the efforts lately made by many cities to acquire and own their public utilities, and because they have been checked in acquiring these utilities by debt limits imposed by their charters or by the State constitution. Mr. Bird S. Coler, the comptroller of New York City, discussed this subject in an article submitted in March to the New York Chamber of Commerce. In advocating the acquisition by the city of whatever of the water-front of Manhattan Island remained in private hands (see New York, paragraph Public Ownership of Docks), Mr. Coler pointed out that, from the standpoint of the financial stability of a city, there is a radical difference between debt incurred for revenue-bearing property and debt incurred for roads, public buildings, and other similar improvements which, however necessary, are not directly or tangibly productive. The latter are a drain upon taxable property and the public revenues; the former, if wisely made, reduce taxes and add at once to the wealth and resources of the city. In the rapid transit contract (see New York, paragraph Rapid Transit), for example, New York City was obliged to issue bonds to the extent of \$35,000,000. But by the terms of the contract both principal and interest were made payable by the contractor. Hence, at the expiration of the lease of the road the city will receive

a great money-making system, absolutely unincumbered, and without the payment of one cent by the taxpayers. Again, a city is legally able to acquire and exercise monopolistic rights in the matter of public utilities, and, therefore, by the destruction of competition and, if necessary, by the arbitrary raising of rates and prices, the risks incidental to ordinary business may be largely done away with. There is another side to the question. The usual form in which restrictions are made upon the incurring of debt by municipalities prohibits debt in excess of a specified per cent. of the assessed value of all taxable property. Now, if the city acquires by purchase valuable revenue-producing property from individuals or corporations, its actual financial strength and ability is so much the greater. But its financial freedom is at the same time restricted, because, even when the city has paid off the debt incurred by the purchase, or if it incurred no debt therefor, still, as Mr. Coler pointed out, the total value of taxable property has been diminished to the extent of the city's purchases and, therefore, for the future, the city, by a specified per cent. of these purchases, is less empowered than it formerly was to acquire by purchase and the issue of bonds further and equally valuable property. Finally, as a noted municipal authority has stated, there is no better financial reason for a prescribed ratio between a city's taxable property and its indebtedness than there is reason in ordinary business undertakings for a definite ratio between the capital and indebtedness of individuals or corporations.

Baltimore—Private vs. Public Lighting.—On January 4 a Municipal Lighting Commission was appointed to determine the advisability of establishing a municipal lighting plant in Baltimore and to ascertain whether the rates charged by the private gas and electric companies were or were not exorbitant. In a preliminary report, submitted February 15, the commission found that Baltimore was paying at least 15 per cent. more for its lighting than any large city in the country; that, though amply warranted by economic conditions, there had been no reduction in electric lighting for 10 years and in gas lighting for 12 years, and that this state of affairs resulted from a monopoly enjoyed by the gas company and from a monopoly by agreement jointly enjoyed by the electric-lighting companies. The commission indicated four ways by which the price for lighting might be reduced to its proper and normal level: 1. "Properly regulated competition, unrestricted competition being considered the least advisable of any method; as has happened heretofore, it surely results in further consolidation and aggravation of the evils." 2. "By making contracts, and providing, if possible, for reductions in price as the number of lights increase." 3. By reducing the price by legislative action. 4. By a municipal plant. The commission recommended that the Legislature pass bills authorizing the appointment of a franchise commission having power to deal with public service corporations, and authorizing the city to issue bonds to pay for a municipal lighting plant. The second of these recommendations was enacted into law by the Legislature, and it is believed that, backed by the power thereby given, Baltimore will be able by municipal or private plants to obtain lighting at reasonable cost.

New York City—Confession of Judgment.—Acts passed by the New York State Legislature in 1900, limiting the power of the corporation counsel of New York City to order unappropriated moneys paid out from the city treasury by his personal and unchecked confession of judgment and by other means, were of especial interest and importance to many large cities, because practically the same conditions exist in them as existed in New York City prior to the passage of these acts. In Philadelphia, for example, the amount of previously unappropriated money taken from the treasury was, in 1899, \$1,459,556.27. The acts passed by the Legislature at the instance of Mr. Bird S. Coler, the comptroller of New York City, to safeguard the city's money, provide in brief as follows: 1. The corporation counsel "shall not institute any proceedings for acquiring title to real estate by condemnation proceedings except for opening streets unless the same shall have been approved by the concurrent vote of all the members of the Board of Estimate and Apportionment. 2. The corporation counsel shall not settle or compromise any claims against the city of New York, or confess judgment against the city or accept any offer of judgment in favor of the city without the previous written approval of the comptroller, and in case of claims exceeding \$10,000 without the added written approval of the mayor. 3. Contracts for work to be done or supplies to be furnished, when not made at public letting, "shall be evidenced by orders signed by the proper head of department, board, officer, or commission," and stating either the specific amount of work or supplies contracted for, or that payment shall be made at current market rates, and in either event the department of finance shall deduct from bills presented for payment any excess over current market rates. 4. The comptroller may require any person presenting any claim whatsoever against New York City to be sworn before him and to answer questions relative to the justness of his claim.

Violation of Contract Tacitly Agreed to by City.—On April 30, 1900, the Supreme Court (United States) handed down a decision declaring void an ordinance passed

by the council of Los Angeles in 1897 whereby the Los Angeles City Water Company was required to sell water at lower rates than it had done at any time since acquiring its charter in 1868, and if it did not so do, then the stipulations of the charter of 1868 regarding the amount of water which the company might take from the Los Angeles River were to be considered as of binding effect. The court held that the city of Los Angeles could not, by direct or indirect means, violate that clause of its original agreement with the water company which provided that though the City Council might annually fix the rates to be charged by the company, yet the rates should in no case be lower than those prevailing at the time (1868) the contract was made. The court held further that the city was not empowered to reduce the amount of water which the company had been accustomed to withdraw from the Los Angeles River. It might be conceded that this amount was greatly in excess of that which the city had formally granted. But since the city had for nearly thirty years tacitly acquiesced in the violation of the contract by the company, and had, without remonstrance, permitted the company to expend large sums of money in utilizing for the people, by plants and equipment, the excess of water so obtained, the city could not now bring action for relief.

MUNICIPAL GYMNASIUM . During 1899-1900 the city of Boston enlarged its public gymnasium facilities by equipping two more such gymnasiums, and by laying the foundation for a fourth, which was to include a bath. The first gymnasium in Boston was the gift of a lady, and has been operated for about four years. The second, at South Boston, though it had been open but a few months when the last report was published, March 20, 1900, had already attained a high degree of popularity and success. These gymnasiums are fitted with an ample supply of gymnastic apparatus, lockers, and shower-baths. Men and women come at different hours, and there are large classes for both sexes at each gymnasium, the classes being supervised with great care by skilled directors. Preliminary physical examination is made by the medical director, and in the case of weaknesses or defects the exercises are prescribed to correct them. The prescribed exercises have been particularly successful in cases of spinal curvature. At the South Boston gymnasium many of the girls work in factories, stores, and offices, and among them were found chest deficiencies and digestive disturbances. Proper exercises, together with a simple prescription, produced marked improvement in a short time. Specially encouraging is the great interest which frequenters of the gymnasiums show in the work.

MUNICIPAL IMPROVEMENT, AMERICAN SOCIETY FOR, founded in 1894, had in 1900 a membership of 110, consisting of city engineers, commissioners of public works, street, sewer, and water-works superintendents, and other city officials. At the annual meetings a variety of papers were read on topics relating to municipal engineering and sanitation. The society publishes annual reports. President, Robert E. McMath, St. Louis, Mo.; secretary, D. L. Fulton, Allegheny, Penn.

MUNICIPAL LEAGUE, NATIONAL, formed in 1894 to improve municipal government, had 120 affiliated associations in 1900. The league has published the *Municipal Program*, and *The Proceedings of the Minneapolis, Cleveland, Baltimore, Louisville, Indianapolis, Columbus, and Milwaukee Conferences for Good City Government*. Secretary, Clinton Rogers Woodruff, 818 Girard Building, Philadelphia; president, James C. Carter, New York.

MUNICIPAL LODGING-HOUSES. During 1900 the city of Syracuse has been operating a lodging-house, the applicant being given supper, lodging, and breakfast. He is then required to work out his board and lodging on the streets or elsewhere, as directed by the Department of Public Works. No applicant will be given board and lodging for a longer period than two weeks. Boston, Washington, and New York have had municipal lodging-houses for several years. In the first two cities some work is required in return for the accommodation furnished. In Great Britain and Continental Europe such lodging places are quite common, but the idea is only beginning to gain a hold in this country.

MUNICIPAL OWNERSHIP. See **MUNICIPAL GOVERNMENT**.

MUNKACZY, MIHALY (MIKHAIL), an eminent Hungarian painter, died near Bonn, May 1, 1900, from a brain disease, from which he had suffered for several years. He was born at Munkacs, October 10, 1844. His parents died soon after the Russian invasion of 1849, and he was apprenticed to a cabinet-maker and house painter in the small town of Csaba. Being maltreated, he escaped, and became associated with the portrait painter Samosy, who encouraged him to attempt an artistic career. In 1864 he took lessons of Ligeti, a landscape painter at Pesth, and was soon able to earn enough to defray expenses of further study in Munich, Vienna, and Düsseldorf. Among his works of this period are: "Easter Festivities,"

"Roasting Ears;" "The Inundation;" "The Wedding Invitation," and "Dressing the Bride." He won a distinguished position among artists when, in 1870, he exhibited in the Paris Salon his "Last Day of a Condemned Man," a work that presented strong effects and revealed a real dramatic sense in the painter. In 1872 he removed to Paris, where he exhibited some successful pictures each year until 1878, when his "Milton Dictating to his Daughters," which is now in the Lenox Library, New York, and is, perhaps, his most artistic work, brought him a popular triumph. Probably, however, his most famous picture is "Christ Before Pilate" (1881), which was exhibited widely in Europe and America, and was finally bought by Mr. John Wanamaker, of Philadelphia, for, it is said, nearly \$100,000. Paintings of the same type, "Christ on Calvary" (also owned by Mr. Wanamaker) and "Ecce Homo," were subsequently produced. These works are highly spectacular, and suggestive of Doré, but are superior to Doré's productions in point of technique. Munkacz also painted a few portraits and a number of genre pictures, among which, known principally through the medium of etchings and engravings, are: "The Village Hero;" "The Wrestler's Challenge;" "The Pawnshop;" "Night Revellers;" "The Dying Brigand," and "Vagabonds Seized." In 1877 he received the cross of the Legion of Honor, and in 1890 was made a commander; in 1878 the Austrian government conferred on him the decoration of the Order of the Iron Cross. A few years before his death Munkacz published *Memories of Youth*. In the latter part of 1896 he sustained a paralytic shock. Thus stricken down at the height of his fame, he was seized with melancholia, which developed into insanity, from which he never recovered.

MURAVIEFF, Count MICHAEL NIKOLAYEVICH, was born April 19, 1845, and died in St. Petersburg on June 21, 1900. Count Muravieff came from a family which had long been one of the most influential in Russian aristocracy and in the world of politics. His grandfather, General Nicholas Muravieff, gained for Russia the Amur province, and concluded the treaty whereby this country was definitely ceded to Russia by China. His father was governor of the province of Grodno, and his cousin has been minister of justice in the Russian cabinet.

Count Muravieff studied at Poltava and Heidelberg, and in 1864 was appointed attaché to the Russian embassy at Berlin. Later he was stationed at Stockholm and Stuttgart, and in 1874 he was appointed secretary of legation at The Hague. Following this, he was successively first secretary in Paris, chancelier d'ambassade in Berlin, and minister in Copenhagen. On January 13, 1897, upon the death of Prince Lobanoff he was appointed by the young emperor, Nicholas II., minister of foreign affairs for the empire—the highest diplomatic position in Russia. In continuance of the policy laid down by his predecessor, Prince Lobanoff, Count Muravieff pushed forward the Trans-Siberian Railroad and "leased" Port Arthur and Ta-lien-wan. Count Muravieff also made a Franco-Russian alliance, seemingly for the purpose of warning the other Powers from interfering with her Eastern projects. It was, perhaps, with the same idea of gaining time that the Peace Conference was called at The Hague. For coincidentally with the debate upon the disarmament of the Powers the Russian army in Asia was being placed upon a war footing, and Port Arthur was being made the strongest fortress on the Pacific. Count Muravieff was an able exponent of Russian diplomacy, and by the concessions which he forced from China relative to Russian railways in Manchuria and Mongolia, he made it certain that all northern China would be brought under Russian "influence."

MUSEUM OF NATURAL HISTORY, AMERICAN, at Central Park West and Seventy-seventh Street, New York City, organized 1869, had in 1899 a membership of 1350. Has a large building, the corner-stone of which was laid in 1874, and has large collections of specimens, open free to the public five days in the week. Mondays and Tuesdays reserved for members or by admission fee of 25 cents. The museum conducts several series of lectures to public school teachers, to members, and to the public. President, Morris K. Jesup; treasurer, Charles Lanier; secretary and assistant treasurer, John H. Winsor.

MUSIC IN 1900. The musical season of 1900 was not marked by the production of any work of the first rank. The partisans of Richard Strauss, admiring his reckless daring in the combination of instruments and clang-tints, claim this distinction for his symphonic poem, *Heldenleben* (really belonging to 1899), as they claimed it for *Also Sprach Zarathustra* and *Eulenspiegel* and other recent works of his. The great majority of critics, on the other hand, severely criticise his work as a *reductio ad absurdum* of ultra-modern tendencies of programme music. Victor Herbert's *Suite Romantique*, in four parts, received much praise for the marked improvement in the style of his work. Henry K. Hadley's new symphony, performed at a concert of his own compositions, strengthened the opinion that the composer has a very bright future before him. *Adonais*, an elegiac overture by George W.

Chadwick, was highly praised by the keen critic Apthorp. So was also Arthur Whiting's *Suite Moderne*, performed at Boston in February. The *Hiawatha* overture, by Rubin Goldmark (young nephew of the eminent composer), did not arouse any particular interest. Mahler's second symphony (C minor), in five movements, for orchestra, organ, solo voices, and chorus, was produced by the composer-conductor at Munich on October 20. Joseph Suk's first symphony in E major was performed by the New York Philharmonic Society on November 16. It is a work beautifully melodious, sincere and powerful, masterly in the polyphonic writing and treatment of the orchestra, full of vigor and passion of youth, perhaps a little too exuberant. Kalinnikoff's symphony in G minor, first given at Kieff in 1897, was performed with great success in Germany and Belgium. The conductors of symphonic concerts the world over had, accordingly, to content themselves with the tried standbys, Beethoven, Mozart, Bach, Schumann, Schubert, Brahms, Mendelssohn, Tchaikowsky, Rubinstein, and Wagner being the names most frequently met with on programmes. In the domain of chamber music a quartet, by Ippolitoff-Ivanoff was played in February by the New York String Quartet, and received warm praise. Ferruccio Busoni's new string quartet in D minor was pronounced a fiasco at its first performance in Germany on October 14. A new quintet by the pianist Dohnanyi, given by the Kneisel Quartet on April 10, was commended as a "good piece of serious music to have been turned by a boy," and as giving "important promise for the future." A new sonata in G for clarinet and piano, by Gustav Jenner, music director at Marburg University, was criticised at its production in London for "an unwise passion for the clarinet." On the other hand, Joseph Labor's remarkable quintet for clarinet, piano, violin, viola, and 'cello aroused the Viennese public to extraordinary enthusiasm when performed by the great clarinetist Herr Mühlfeld. A pianoforte concerto by Dohnanyi proved to be a composition of inordinate length, weak in thematic invention, overburdened with meaningless elaborations, and hardly bearing any trace of genuine inspiration. Matters stood somewhat better in the line of vocal music during the past year. The most pronounced success of the year was Gustave Charpentier's (*q.v.*) *Louise*, comic opera in four acts, produced at the Paris Opéra Comique early in the year, and performed over fifty times within seven months with average receipts of about 7000 francs per night—a sum quite extraordinary for such a long run. The scene of the opera is laid at the Montmartre of to-day, and the personages are the factory workmen and girls, the street singers, and third-rate actors and Bohemians inhabiting that part of Paris. The modernity of the subject, the strong dramatic instinct of the composer, the local color and atmosphere caught with such art and truthfulness by the composer, born and reared on the Montmartre, and, finally, the melodic beauty of the work—all these combined to take Paris by storm, and the wonderful enthusiasm aroused by the first performance did not seem to wear out with subsequent repetitions. Camille Erlanger's (*q.v.*) new opera, *Le Juif Polonais*, based on Erckmann-Chatrian's play of the same name, was produced at the Opéra Comique in April. Written especially for Victor Maurel, who impersonated Mathias, the opera suffers from a musical monotony, as Maurel rather acted than sang the part. Otherwise the work is dramatically strong, contains many local Alsatian folk-tunes treated with great skill, and the orchestration is singularly beautiful. Puccini's (*q.v.*) *La Tosca*, originally produced at Rome in January, duplicated its success during the London season of opera. The critics, with few exceptions, found it very admirable and a distinct advance upon his successful *La Bohème*. More than a *succès d'estime* fell to the lot of Eugen d'Albert's one-act music drama, *Cain*, founded on Byron's poem, and produced at the Berlin Royal Opera House in February. Brilliant in orchestration, the music is free from slavish imitation of Wagner. The scene with Lucifer was criticised as detracting from the purely human interest of the opera, while adding nothing to it either musically or dramatically. A fine performance of *Renaud d'Arles*, opera in five acts, by De Fourcaud and Noël des Joyeux, was given at Monte Carlo on March 31, and lasted about five hours. The critics spoke of it very highly, but recommended considerable cutting for future success. V. Joncières's *Lancelot*, in four acts, failed at the Grand Opéra in Paris, and Leoncavallo's *Zaza* met a similar fate at its first production in Milan in November. A novelty for the United States was Niccola Spinelli's *A Basso Porto*, produced by the Castle Square Opera Company. This production of the latter-day Italian *verismo* is in three acts, and deals with the life of the lowest elements of Naples "in the lower harbor." The tale of bloody revenge on a spy among the *camorristi*, a secret society of objectionable character, is illustrated musically in the direct and forceful manner of *Cavalleria Rusticana* and *Pagliacci*. While more pretentious in its orchestration and symphonic illustrations of the situations in the drama, it has not the sweep of passion and soul-stirring melody of *Cavalleria*, being more the product of musicianly workmanship than direct inspiration. Of the successes of the previous years, Mascagni's *Iris* continued as the favorite, and so did Puccini's *La Bohème*, Leoncavallo's opera of the same name being

next in popularity. Important revivals were Mozart's *Così fan tutte* at Vienna, *Flauto Magico* in New York, and *Don Giovanni* at the Berlin Royal Opera with the original Italian text of Da Ponte, but without success, so that the German text was again resumed in subsequent performances; Berlioz's *Benvenuto Cellini* at the Berlin Royal Opera, and *Les Troyens* in Paris and Leipzig. *Halka*, by the Polish composer Moniuszko, had its five hundredth performance at Warsaw, and Pergolesi's *Serva Padrona* (1733) and Favart's *La Chercheuse d'Esprit* (1741) were revived at the first of the *matinées de répertoire* at the Paris Opéra Comique. An operetta, *Les Saltimbanques*, by Louis Ganne, produced in Paris in January, met with great success. The music is said to be sparkling, the dances attractive, and the staging exceptionally beautiful. During the year the following comic operas were produced in English with more or less success; Sidney Jones's *San Toy*, Victor Herbert's *The Viceroy*, Julian Edwards's *The Princess Chic*, Leslie Stuart's *Florodora*, and W. H. Neidlinger's *Sweet Ann Page*, to mention the most important ones. The year appears to have been more successful with regard to choral music. The place of honor in this field must be given to Edward Elgar's (*q.v.*) *Dream of Gerontius*, performed at the Birmingham Festival. Though setting for himself an impossible task of treating adequately in music the mysteries "that lie hidden across the portals of the tomb," the composer succeeded in writing a work that in certain parts is pronounced a marvel of beauty, tenderness, and serenity. "Scarcely since Wagner's death has there been any musical work so sincere, so fine or noble, so delicately graduated, so exquisitely poetical." It is a work full of striking individuality, though written by a deep student of Wagner, and "technically even the score of *Die Meistersinger* does not overshadow this new score." Professor Horatio Parker, whose *Hora Novissima* had signal success the year before, produced his new work, *A Wanderer's Psalm*, which was unanimously praised as much higher music than his previous effort. The alto and the bass solos, the most striking numbers, were particularly admired. Coleridge-Taylor's (*q.v.*) setting of four sonnets, by Elizabeth Browning, under the title *The Soul's Expression*, for contralto and orchestra, was characterized by the composer's usual force, expression, and earnestness, but it was "never absolutely convincing." The Transvaal War was the immediate occasion of Sir Hubert Parry's new *Te Deum*, performed at the Hereford Festival, and written "to commemorate the noble achievements of the British forces in South Africa." This forms a genuine exception to the rule of *pièces d'occasion*, being the loftiest, most impassioned, and best-written work of the composer. In Paris Massenet's eagerly awaited oratorio, *Terre Promise*, was produced with great success in March, while Enrico Bossi's new cantata, *Canticum Canticorum*, given by the Riedel Choral Society of Leipzig, was highly commended for the "workmanship displayed and for the natural elegance of feeling and expression." Other vocal novelties of the year were Arthur Somervell's cycle of twelve songs, based on Tennyson's *Maud*, rendered by Plunket Green in London; Richard Strauss's melodramatic music to *Enoch Arden*, delivered by Bispham in April at New York, and *Ganymed*, a poem for contralto and orchestra, by Louis Saar, a musician residing at New York. Relative novelties were: In France, Wagner's *Last Supper of the Apostles*, produced under Eugène d'Harcourt at the Church St. Eustache; in the United States, César Frank's *Les Béatitudes*, given by the New York Liederkrantz, under Dr. Paul Klengel, director, with Van Rooy singing the voice of Christ; and, most important, Bach's stupendous *Mass in B minor*, by the New York Oratorio Society on April 5, and repeated again in November with great success. This is the noblest inspiration of the composer's genius; but though sounding more or less simple to an ordinary ear, presents such formidable difficulties in the intricacies of its polyphonic writing that choral societies rarely undertake to perform it. A few days previous, on March 27, the mass was given in its entirety for the first time, in the United States, at the Moravian Church in Bethlehem, Penn., under J. F. Wolle, the organist of the church.

The musical festivals of the year were quite numerous. The important ones in England were: (1) The triennial *Handel* at the Crystal Palace, under August Manns, on June 19, 21, and 23, the attendance reaching the high figure of 80,204, as against 67,378 on the last occasion; (2) the triennial *Chester Festival* on July 25-27, under Dr. Joseph C. Bridge, whose *Requiem*, specially written in memory of the English dead in the South African War, was performed; (3) the *Hereford Musical Festival*, beginning on September 9, under Dr. Sinclair, was a great artistic success, the splendid orchestra and the number of novelties performed contributing a great deal to that end; and (4) the *Birmingham*, under Dr. Hans Richter, on October 2-5, the notable novelty being Elgar's *Dream of Gerontius*, referred to above; (5) Robert Newman's second *London Musical Festival*, from April 30 till May 5, was given in conjunction with Lamoureux's orchestra, in all about two hundred players. Some new French pieces were played by the visiting orchestra under Lamoureux's successor and son-in-law, Chevillard, while the English novelties were

given under the direction of Wood. The year in musical festivals in the United States was particularly interesting, owing to the prize given by Emperor William II., to be awarded to the best singing society at the Nineteenth National Saengerfest and the fiftieth anniversary of the Northeastern Saengerbund of Brooklyn, held during June 30 to July 4, under the directorship of Arthur Claassen, in the Thirtieth Regiment Armory and Academy of Music, Brooklyn, N. Y. The Kaiser's Prize, a solid silver figure of a "Mediaeval Singer," valued at \$10,000, was awarded to two societies jointly; the Arion Society of Brooklyn to hold for eighteen months, and the Junger Männerchor of Philadelphia for the eighteen months following. Baron von Holleben, the German ambassador, represented the kaiser at the festival. The receipts for admissions exceeded the disbursements (\$25,000) by \$5000. The Fourteenth (biennial) Musical Festival of Cincinnati was given on May 8-12. The chorus numbered four hundred to five hundred, and the excellent orchestra was under Thomas's leadership. The festival, under E. W. Glover's management, was a great success artistically and financially. The artists engaged were Sembrich, Schumann-Heink, Ben Davies, and Bispham. The novelty was Strauss's *Ein Heldenleben*, and the most important numbers on the programmes were: The Ninth Symphony, Bach's Toccata in F for organ, Berlioz's *Te Deum*, Schubert's *Unfinished Symphony*, and Brahms's *Requiem*. *St. Paul* was performed on the opening night, and at the end of the festival there was a special Wagner programme. The forty-third Worcester (Mass.) *Musical Festival* was held at the end of September, Chadwick, as usual, being the musical director. The great event was the performance of César Frank's *Les Béatitudes* on September 27 with the following soloists: Miss Anderson, Miss Stein, Miss Foss, Messrs. Williams, Towne, Miles (voice of Christ), and Walker (Satan). In his review of this performance the well-known Bostonian critic, Philip Hale, said: "There is no more truly religious work in the whole literature of music. It is a masterpiece of masterpieces, one that would place Frank, if he had written no other work, by the side of Bach and Beethoven." Other relative novelties were: Glazunoff's Sixth Symphony and McDowell's symphonic poem, *Lancelot and Elaine*, a very fine work, but one which cannot rank with either of his suites. Other numbers worth mentioning were: Verdi's *Te Deum*, Schubert's *Unfinished Symphony*, and Brahms's *Requiem*. The artists that created a great impression were: Blauvelt, Schumann-Heink, Williams, and Campanari. The series of 180 concerts given by Édouard Colonne at the Paris Exhibition must also be mentioned here, as these do not properly fall under the regular performances of the musical season. Of the 52 concerts devoted to French music, 28 were given up to the works of Berlioz, Bizet, Lalo, Massenet, Pierné, Saint-Saëns, Widor, and Vincent d'Indy. The 54 international programmes were made up of the works representing the following countries: Austria, Bohemia, England, France, Germany, Hungary, Italy, Norway, Poland, Russia, and Spain. With the 54 concerts of foreign music and 28 of popular music the total makes 188, but the figures are so given in *Le Ménestrel* of August 5.

The world of music suffered some severe losses during the year. The most important name among the deceased is that of Sir Arthur S. Sullivan (*q.v.*), the composer who delighted English and foreign audiences for nearly two-score years. Other prominent deaths were Sir George Grove (*q.v.*), the musicograph, the Bohemian composer Zdenko Fibich (*q.v.*), the veteran tenors Vogl (*q.v.*) and Sims Reeves, the baritones Del Puente (*q.v.*) and Franz Betz (*q.v.*), the Berlin piano-maker Karl Bechstein, the musical theorist Ludwig Bussler, and Dmitriv Slavyanski (Agrenoff), the leader of a Russian capella, with which he toured the world. Patti again delighted an enormous audience by her reappearance in London at a charitable concert for the benefit of the families of officers killed in the Transvaal; the septuagenarian baritone Faure sang, after an interval of many years, at the Trocadéro, Paris, for charity, with his imitable art of old and completely filling the immense hall; Jean de Reszke's voice failed him at his reappearance in London, and a few subsequent appearances did not improve his vocal condition; Therese Malten, after her long and serious sickness, resumed her work in the Dresden Opera House; Marie Renard, the prime favorite of Vienna, retired from operatic life after twelve years of singing, and Calvé cancelled her autumn engagement at the Paris Opéra on account of ill-health, and went on a long trip to Turkey, Egypt, and India. New stars that appeared on the musical horizon were the tenors Bonci, who after years of success in Italy and Russia made a great hit in London; Constantino, who created a furor in Madrid, and Xanthopoulos, a sensation in Athens. The new Viennese conductor, Mahler, had extraordinary success with his orchestra at the Paris Exposition, and Siegfried Wagner received an ovation in Paris in the capacity of conductor. Important anniversaries that occurred were the one hundred and fiftieth anniversary since the death of J. S. Bach, the fiftieth anniversary of the first performance of *Lohengrin* at Weimar, the fourteenth anniversary of Liszt's death, celebrated at Weimar by Busoni

and Da Motta by a Liszt programme, and Verdi's eighty-seventh anniversary was celebrated in Italy. A monument to Chopin, by G. Dubois—a bronze bust on a white stone pedestal, against which leans a half-nude female figure—was unveiled at the Luxembourg Garden, Paris, on October 17; and a monument of Glinka, whose *Life for the Tsar* was given at Covent Garden in 1887, was erected at St. Petersburg. A marble bust of Tschaikowski was presented to the Leipzig Gewandhaus by his pupils Siloti and Sapellnikoff. Two Nibelungen cycles were given in London, two in New York, several in Munich, three performances at Madrid, under Stavenhagen, also at Barcelona and Lisbon. *Walküre* was performed at Genoa for the first time in February with enormous success, and the first performance of *Tristan und Isolde* in Russian at St. Petersburg with the tenor Yershoff and Felia Litvinne in the title parts. It had only a moderate success, as "Wagner is not specially beloved here, and the opera is, indeed, dull and wearisome." The arduous task of translating faithfully Wagner's works into English has been finished after many long years by William Ashton Ellis with the appearance of the eighth volume, containing all posthumous works of the master.

The regular season in England was quite similar to its predecessors. The Philharmonic Society, in its eighty-eighth season of activity, was, as before, the musical mainstay, interpreting the highest kind of music. Mr. Robert Newman's Queen's Hall Promenade Concerts, under the leadership of Henry J. Wood, began on Saturday, August 25. There were special symphony nights, Wagner nights, popular nights with "concerto" and without "concerto," etc. Their special feature was the performance of all the nine symphonies of Beethoven in chronological order. The regular concerts earlier in the year were made up chiefly of symphonic works, Tschaikowsky's Sixth (*Pathétique*) Symphony leading the works of all the other masters in the number of performances. Dr. Hans Richter's Orchestral Concerts were given at St. James's Hall on Mondays, May 28, June 11 and 18, and in the autumn. At the same hall Arthur Chappell's Popular Concerts reached the fifteen hundredth performance on March 19. Among the visiting performers the most pronounced success was made by the young Bohemian violinist Johann Kubelik. In various concerts and five recitals he proved himself a veritable Paganini *redivivus*, although in classical music he did not display sufficient ripeness of interpretation. Other soloists of renown were Carreño, Paderewski, Rosenthal, and Dohnanyi. The opera season was particularly successful, both artistically and financially, the subscription amounting to over £42,000, the profits being so considerable that about £15,000 will be spent on improvements for the next season. The individual successes were those of Calvé, who appeared only in *Faust*, *Carmen*, and *Cavalleria Rusticana*; Melba, who sang Juliette, Marguerite, Lucia, Rosina in *Barbiere di Siviglia*, and Mimi in Puccini's *La Bohème*; Ternina, whose artistic position as an exponent of the soprano parts in *Fidelio*, *Tannhäuser*, *Lohengrin*, *Walküre*, *Siegfried*, and *Götterdämmerung*, was greatly heightened by her creation of the title rôle in *La Tosca*. The erstwhile Valkyr maiden surprised her audience by her chic and dash in the first act of the opera, while her acting in the second and third were quite worthy of a queen of tragedy. Gulbranson, the patented Brunnhilde of Bayreuth, did not produce any particular impression, though a great favorite in Germany. Bonci, an Italian with a beautiful tenor voice and impassioned style, made a great hit. The German tenors have proved unacceptable, owing to their faulty method of singing. The other artists heard during the season were: Gadski, McIntyre, Fanchon Thompson, Strong, Scheff, Miranda, Adams, Schumann-Heink, Olitzka, Walker, and Homer; Jean and Édouard de Reszké, Saléza, De Lucia, Kraus, Slezak, Dippel, Imbart de la Tour; Scotti, Van Rooy, Bensaude, Bertram, Blass, Friedrichs, Mühlmann, Journet, and Plançon; and Mancinelli, Mottl, Paur, and Flon were the conductors. The list of operas and number of performances were as follows: *Faust*, 8; *Tannhäuser*, 7; *Lohengrin*, 6; *Roméo et Juliette*, 5; *Carmen*, 5; *La Tosca*, 4; *Aida*, 4; *Siegfried*, 3; *La Bohème*, 3; *Walküre*, 3; *Götterdämmerung*, 2; *Lucia di Lammermoor*, 2; *Rheingold*, 2; *Rigoletto*, 2; *Meistersinger*, 2; *Don Giovanni*, 2; *Fidelio*, 2; *Huguenots*, 2; *Pagliacci*, 2; *Cavalleria Rusticana*, 2, and *Barbiere di Siviglia*, 1.

The year in the United States was one of unusual activity. The Boston Symphony Orchestra has kept its place at the head of the similar musical organizations by the high virtuosity of its individual members, by the excellence of their instruments, by the perfect precision and homogeneity of tone in ensemble playing, and by the splendid catholicity of its programmes. This latter feature, which often goes under the somewhat reproachful name of eclecticism, was due chiefly to conductor Gericke, whose interpretations just fall short of ideal, owing to a sort of classical reserve, that keeps him from passionate outbursts where one naturally longs for them. The New York Philharmonic Orchestra made great strides under the energetic leadership of Emil Paur, but still it is very far from standard playing. The old age of most of its members is the chief obstacle in the way of sufficient rehearsing, so that

the playing is often ragged, intonation poor, and the balance of tone is disregarded. The Pittsburgh Orchestra, under Victor Herbert, is a young organization, and was quite welcome in New York. Though lacking the perfect unanimity which comes from years of ensemble playing, it possesses a great deal of snap and vigor, that speak well for its future. A somewhat unpretentious start was made by Frank Damrosch's Symphony Concerts for the Young, at which the excerpts performed were preceded by explanations. Their success induced the conductor to undertake symphony concerts on a larger scale in the fall of the year, and these, though in no sense rivalling the performance of the other orchestras mentioned, became quite a factor of great educative value in the musical life of New York City. Kaltenborn continued his successful summer concerts, but they cannot be taken seriously in a musical sense. Among the chamber music organizations, the Kneisel Quartet, consisting of members of the Boston Symphony Orchestra, easily holds the foremost place. Their instruments are among the best in the world, and by long practising together, in which their intimate friendship plays no mean part, these musicians have attained a plane of excellence usually met with in solo performances only: an absolute uniformity of tone so rich and mellow, the finest dynamic gradations and the most delicate shading are among its most salient characteristics. The large and constantly growing attendances at their concerts attest the existence of a public interested in the most serious department of music. Besides these, series of concerts were given by the New York String, the Kaltenborn, the Randegger Quartets, and several chamber music concerts by Elsa Ruegger, Petschnikoff, Lachaume, Marteau, and De Pachmann. During the year under review, the chief choral organizations came well to the front by the performances of works which have been spoken of before among novelties. The Oratorio Society distinguished itself by Bach's mass in B minor, while the Musical Art Society continued its praiseworthy work of familiarizing the public with the rarely heard masterpieces of polyphonic writing for the Church. Thus were given the choicest flowerings of the genius of Palestrina, Lasso, Willaert, Bach, and others. In the antiphonal passages this society was assisted by the People's Choral Union, of about one thousand voices. The union, whose performance of Handel's *Samson* in May was a great success, is the best pioneer in spreading, through its members, a love for music into the homes of the many who would not be reached otherwise. The three organizations mentioned are under the leadership of Frank Damrosch, to whose untiring labors their success is due in a large measure. Of visiting artists there was a plethora, even compared with the previous year. Paderewski had, of course, his usual success, but he seemed determined to prove that he had strength to equal the other pianists, and the result on such occasions was very saddening to the judicial: the piano produced little more than unmusical banging. Pachmann, in spite of his apish antics, that kept the audience in roars of laughter, was the chief exponent of piano playing. His great range of dynamics, with all the most delicate intermediate gradations, his wonderful variety of tone color, his touch, the most velvety and caressing one can hear, are qualities that none but he possesses. As to his interpretations, the everlasting feud between Boston and New York immediately asserted itself: while accepted in the former as a supreme master for his "unapproachable rhythm, color, and sense of proportion," he was criticised in the metropolis as almost a charlatan. Young Hambourg thrilled his hearers by the elemental force of his sinewy wrists and fingers, by the dazzling speed and brilliancy of his runs in octaves, but left a good deal to be desired on the side of interpretation. He was happiest in the compositions of Liszt, Rubinstein, and Saint-Saëns, but not so in Beethoven, Schumann, and Chopin. His many recitals were all well attended. Dohnanyi pleased the New York critics by his classical repose and equipoise, his mature interpretations of the three great B's, while Boston found therein "calculated repose and aplomb, that argue ill for his future." Frieda Siemens (heard some years back as a child prodigy) did not arouse especial interest. Carreño, "the Valkyr of the piano," came back in possession of her overwhelming temperament and volcanic passion, but with more distinct traces of the mellowing effects of age. Ossip Gabrilowitsch, a Russian pianist, pupil of Rubinstein, played in New York and Boston, and captivated the audiences by the elegance, finish, and technical brilliancy as well as emotional depth of his playing. but the critics found in him more promise of a first-rank future than actual achievement. His exaggerated nuancing and overdone analysis were particularly criticised. Another young pianist, who came almost unheralded and had most pronounced success, was Harold Bauer. Arthur Whiting's recitals gave much pleasure to the somewhat limited coterie of lovers of Brahms. While not striking in any respect, his playing was eminently musical and prompted by sincere devotion to his art and that master. Ludwig Breitner's playing proved academic in the worst sense of the word, and he settled in New York to devote himself to the domain of teaching, where he properly belongs. Of the violinists, the Russian Petschnikoff did not repeat his triumphs of Germany, where he received remuneration quite fabulous for that country. His



A GROUP OF OPERA SINGERS.—1. Mme. Melba. 2. M. Jean De Reszké.
3. M. Plançon. 4. Mme. Nordica.

tone, while sweet and luscious, is rather small, with little virility about it. His technique is not of extraordinary brilliancy, his intonation not always faultless, while he is prone to transgress the line between emotion and sentimentalism. The much-heralded renderings of Bach proved disappointing in their lack of breadth and strength. Marteau returned a much riper artist than before, although, after all, rather a charming than great performer, lacking those very essential qualities which move and stir one to the depth of one's heart. Leonora Jackson displayed an excellent, though not impeccable, technique, but there was not a trace of the intellectual grasp necessary to cope with the works of the giants of violin literature, and the critics found her appearances in public decidedly premature. Elsa Ruegger proved a cellist of sterling merit, equipped with a good technique, a tone powerful for her sex, and a musicianly temperament. The young Gérardy came back, and was welcomed by the critics and public alike. Hailed as a perfectly finished artist during his first visit to the United States, he fully sustained his high reputation. Many song recitals were given, the most prominent being those by Bispham, Van Rooy, Brema, Nordica, Sembrich, and Schumann-Heink. Sembrich's programmes were made up of lyric gems in eight different languages and arranged with great judgment. Her success was enormous, but it must be admitted that age is laying its fingers on her voice, so that her upper tones are quite unsteady and the intonation is often bad. The lecture recitals of the English singing teacher, William Shakespeare, were uninteresting and very poor from a musical point of view; with such mediocre voice production one cannot lecture on the art of singing and successfully illustrate it.

The chief attraction with the public was, as usual, the opera, the conductors being Mancinelli, Paur, Damrosch, Bevignani, and Flon. The singers heard during the calendar year were: Calvé, Sembrich, Ternina, Eames, Nordica, Adams, Scheff, De Lussan, Strong, and Melba; Mantelli, Brema, Olitzka, Homer, and Schumann-Heink; Alvarez, Van Dyck, Saléza, Dippel, Cremonini, Salignac, Imbart de la Tour, and Jean de Reszké; Scotti, Campanari, Bispham, Bertram, Pini-Corsi, and Van Rooy; Edouard de Reszké, Pringle, Journet, and Plançon. *Carmen* and *Lohengrin* headed the list by 8 performances each; *Faust* and *Die Walküre*, 7; *Aida*, *Romeo et Juliette*, and *Tannhäuser*, 6 each; *Il Flauto Magico* and *Cavalleria Rusticana*, 5; *Nozze di Figaro*, *Die Meistersinger*, and *Don Pasquale*, 4; *Barbiere di Siviglia*, *Tristan und Isolde*, and *Der Fliegende Holländer*, 3; *Rheingold*, *Siegfried*, *Götterdämmerung*, *Fidelio*, *Les Huguenots*, *Le Prophète*, *Trovatore*, *Traviata*, *Lucia*, and *La Bohème*, 2 each; and single performances of *Pagliacci*, *Mignon*, *Die Lustigen Weiber von Windsor*, *Rigoletto*, and *L'Africaine*, making a total of 104 performances, besides those given in the other cities. The novelties were *Il Flauto Magico*, given on a magnificent scale five times in two weeks with an unusual array of artists; *Fidelio*, *Don Pasquale*, Nicolai's *Merry Wives*, and in December Puccini's *La Bohème*, in which Melba impersonated Mimi with her customary vocal fluency, but with hardly a trace of the tragic side of the character. Sembrich's new parts were Marguérite, Eva, Norina in *Don Pasquale*, Mrs. Ford, and Queen of the Night. Her hard work told on her singing toward the end of the season, so that during the last five or six weeks it was invariably marred by poor intonation. In December she returned at the head of her own operatic company to tour the United States. Before starting for the tour she gave several concerts in New York. Owing to sickness, Calvé had to leave the company to recuperate, and thus appeared only in *Faust*, *Carmen*, and *Cavalleria Rusticana*. Eames's new rôles were Pamina—a pretty and pleasant, though by no means appealing figure—and *Aida*, distinguished more for artistic dressing than a complete realization of the character musically or dramatically. Alvarez (*q.v.*) was acclaimed by his audiences, but treated with unfriendliness by the critics. He is an impassioned actor, has a splendid, powerful, and beautiful voice, but with frequent lapses from pitch. On some evenings his singing was beyond caviol, on others there was much to explain the invariable opposition of the critics. Jean de Reszké's return on New Year's Eve demonstrated that his voice is giving way to the ravages of time, and that his art is now still further taxed to conceal the flaws, the line between art and artifice thus being obliterated.

The opera season was full of disappointments, owing to a great deal of sickness among the singers. Nearly half of the operas were given with casts different from those announced, or were substituted by other operas. Alvarez's leave from the Paris Opéra was a short one, Saléza left the company about the middle of the season, owing to illness, Van Dyck was so often indisposed that the burden of the work fell upon Salignac, not endowed by nature for anything above light parts, and Dippel, who sang in German, French, and Italian, but hardly satisfactorily in any opera. In these circumstances the management engaged Julius Perotti, who was singing in opera at the Germania Theatre. Except for a few ringing high notes, this veteran tenor, once a favorite in the German opera seasons, possessed no qualifications: voice, true singing, style, appearance, and interpretation were wofully lacking, and

yet he sang in *Trovatore*, *Lucia*, *Lohengrin*, *Tannhäuser*, *Huguenots*, and *Aida*, and won considerable praise simply as an old-time acquaintance. Another tenor, Cornubert, brought over from Havana, had more to commend him, but his French-Italian manner of singing, with all its typical vices, militated against his success, so that he appeared only three times. The Castle Square English Company of Savage, after a very successful season, combined with Grau, and the Metropolitan Grand Opera in English began its operations on October 1. Much was expected from this venture in the way of establishing English opera on an artistic basis: the singers engaged were competent (De Lussan, Thompson), there was an excellent orchestra, the lusty-voiced chorus of the Castle Square was there, a good ballet was provided, the staging was good, and the prices of admission ranged from 50 cents to \$2, yet the audiences were small and were little larger when the prices were cut down to 25 cents, the cheapest, and \$1.50, the highest. This practically meant the prices of the American Theatre, but the patrons did not come to the Metropolitan, and at the close of the season it was found that the venture had hardly realized expenses. After several weeks of opera in other cities the Savage-Grau combination was dissolved, and the outlook for the firm establishment of opera given in English in an artistic manner and at popular prices is still gloomier than heretofore. The musical life in the other cities is in a degree the same as in the metropolis, and needs no special mention. The new Symphony Hall in Boston was opened and dedicated on October 15.

The musical events of importance in Europe have already been mentioned. As to the regular seasons they are pretty nearly the same year in and year out. The Italian opera performances at Berlin by Sembrich and her company were very successful, and added variety to the regular performances in German. At Munich, besides the five Mozart operas and those of Wagner, *Fidelio*, *Lucrezia Borgia*, Siegfried Wagner's *Bärenhäuter*, Auber's *Fra Diavolo* and *La Part du Diable*, and F. David's *Lalla Roukh* were performed in the summer season. The popularity of Russian composers noted in former years has been increasing, and the concert programmes in all important music centres usually contain the names of Rubinstein, Tschaikowski, Rimsky-Korsakoff, Borodin, Glazunoff, Glinka, and others. A concert of Russian music was given by the Society of Santa Cecilia at Rome, under Safonoff, in January, and another, under Vinogradski, at Leipzig in October. Tschaikowski's one-act opera, *Iolanthe*, was received with great favor in March by the Viennese, and considered as an expression of the composer's genius in its happier aspects. The Rubinstein Quinquennial Prize was awarded at Vienna to Goedicke, of Moscow, for composition, and for the pianoforte to Émile Bosquet, pupil of A. de Greef.

MUSICAL ART SOCIETY, organized in New York in 1893 to bring before the musical public the works of Palestrina, Bach, and other old masters, thus creating a love for and appreciation of the best and purest music. The society endeavors to give the same in as perfect a manner as possible. The society has a chorus of 60 professional singers. Two concerts are given annually—in December and in March. President, Frederick E. Hyde; musical director, Frank Damrosch; secretary, Miss Laura J. Post, 24 East Thirty-third Street, New York City.

MYSTIC SHRINE, NOBLES OF THE, is an ancient Arabic order, and while not a regular Masonic body, is composed of Masons who have reached the thirty-second degree, Ancient Accepted Scottish Rite (eighteenth degree in England), or Knights Templars in good standing. The latest reports give 83 temples in the United States, with a total membership of about 56,000.

NANKING. See CHINESE EMPIRE (paragraph Cities of China).

NATAL, a British South African colony, situated northeast of Cape Colony, has a frontage of 376 miles on the Indian Ocean, an area (including the province of Zululand, annexed December 31, 1897) of 35,019 square miles, and a population estimated at 921,000. There are about 800,000 Kaffirs, 61,000 Indians, and 60,000 whites, of whom about 5000 are Dutch. Durban, the only port and largest town, has 41,000 inhabitants, and Pietermaritzburg, the capital, 24,595. Instruction is well provided for by government and private schools, and it was estimated in 1898 that only 200 white children were receiving no education. There were also 182 schools for natives and 32 schools for Indians. The chief agricultural products are sugar, coffee, indigo, tobacco, rice, and tea. Tea has been introduced only recently, but in 1898 the crop amounted to 1,037,100 pounds. In the highland districts grazing and sheep farming are very important industries. The coal fields are of great promise. In 1898, 387,811 tons of coal were produced; in 1899 and 1900, owing to the war, only 328,693 tons and 241,330 tons respectively. The establishment of railroad communication between the coal fields and Durban is certain to develop the mining industry. The chief articles of imports are metals and metal manufactures, clothing, foodstuffs, wood manufactures, and chemicals. The principal exports are wool, sugar, bark, hides and skins, angora hair, tea, and tobacco. In 1899 the imports were

as follows: Merchandise, £4,889,000; government stores and provisions, £471,000; bullion and specie, £1,389,000. Of the imports, £3,494,000 worth came from the United Kingdom and £668,000 worth from America. In 1900 imports remained at about the same figures, £6,695,000, but exports fell off from £1,122,000 to £557,000 owing to the war, which interfered with production for over six months. Wool, for instance, dropped from £609,000 to £61,000, coal from £155,000 to £117,000, and hides and skins from £66,000 to £31,000. The overland exports to the South African Republic and Orange Free State amounted to £1,300,000 in 1899 and £218,000 in 1900. Revenue is derived from railways, posts and telegraphs, customs, excise, stamps, land sales and native hut tax; the chief items of expenditure are railways, public works, and defence. The revenue in 1899 amounted to £2,066,251, and the expenditure to £1,914,724. The public debt in 1899 was £9,019,143. In 1900 there were 591 $\frac{3}{4}$ miles of railway open, all worked by the government, and all but 50 miles built by the government. Defence is provided for by a body of European mounted police numbering about 660, a volunteer force of about 1550, and a naval corps of 90 men. Natal was settled in 1824 by a small body of Englishmen, and from 1835 to 1837 by a large force of Boers. In 1843 the territory was proclaimed British in spite of the Boers' attempt to set up a government at Pietermaritzburg, and it was annexed to Cape Colony. It became a separate colony in 1856. Later Zululand (*q.v.*) and British Amatongaland were annexed to Natal. The government consists of a governor, a legislative council of 12 members nominated by him, and a legislative assembly of 39 members elected by popular vote. The governor of the colony in 1900 was the Hon. Sir Walter Francis Hely-Hutchinson. For the British campaign in Natal during 1900, see TRANSVAAL. See also COLONIES (paragraph British Colonial System).

NATIONAL EDUCATIONAL ASSOCIATION. See EDUCATIONAL ASSOCIATION, NATIONAL.

NATIONAL MUSEUM. See ANTHROPOLOGY IN AMERICA.

NATURAL GAS. The United States Geological Survey states the value of natural gas produced in the United States during the year 1899 at \$20,024,873, as against \$15,206,813 in 1898. The gross returns from the sale of Canadian natural gas in 1899 amounted to \$387,271, while in California the product amounted to 115,110,000 cubic feet, valued at \$95,000. The chief interest in natural gas, however, centres in the State of Indiana, where it has been extensively used for manufacturing and domestic purposes. The supply of this natural fuel is gradually failing, and there are definite indications that the natural gas will be finally exhausted. The value of the gas, which was \$5,718,000 in 1893, had fallen to \$5,069,969 in 1898. It is undoubtedly true that the gas has been wasted, having been allowed to escape, used merely for advertising and given away free to corporations as a bonus for establishing their plants in towns. In Indiana natural gas occurs in the eastern central part of the State, and is found in the uppermost fifty feet of Trenton limestone which underlies the entire State. The pressure of the gas is due to the water in the rocks, and as the gas is exhausted the water rises in the pores of the rocks and the pressure becomes less. The rate of diminution of pressure indicates the rapidity of the exhaustion of the supply. The pressure of the gas does not sink to zero, as the well is either drowned out or the supply shut off by the rise of the salt water. In 1890 the average pressure was 325 pounds, and on January 1, 1900, it was 155 pounds. As the gas is shut off when the pressure falls as low as about 130 pounds, the critical condition can be seen to be quite near at hand. The report of the State gas inspector for 1899, published in 1900, states that there is still considerable activity in drilling wells and laying pipes. This latter step is necessary with old wells and plants, however, as with the diminished pressure more lines are required. The gas is also compressed by pumps, and in 1899 five new stations were equipped with compressing apparatus. The decline in the output is shown by the records of over 300 wells, and the general service has lately been quite unsatisfactory. The cities supplied with natural gas have experienced considerable growth, while the burning and consuming devices in most cities are neither adequate nor economical. In 1899 laws were enacted regulating the manner of maintaining and operating natural gas-pipe lines and machinery, and the Supreme Court of the United States (see INDIANA, paragraph Waste of Oil and Natural Gas) decided that the State has the right to protect the supply of natural gas from destruction.

In Indianapolis during 1900 much excitement was caused by the threat of the Natural Gas Company to cut off the supply from certain consumers who were using devices which enabled them to secure a greater supply of gas than, as the company claimed, they were entitled to receive. Arguments were advanced on both sides, and the matter attracted considerable attention for a while, but the whole situation was caused by the decrease in the supply, which made necessary greater precaution in the distribution, as well as the addition of various controlling appliances. The effects of

the diminished flow of natural gas will be more injurious to the householder than to the manufacturing concerns, as the latter can readily adapt their plants to other kinds of fuel or make producer gas from the coal in which Indiana abounds. Manufacturing companies are warned by the State geologist against settling in the natural gas region, and recommended to locate near coal deposits.

NATURAL SCIENCES, ACADEMY OF (Philadelphia), founded in 1812, had in 1900 a membership of 600. The society is devoted to the cultivation of original research in natural history. The library contains about 60,000 volumes, exclusively relating to the objects of the academy. The museum in several departments is the most important in America. Meetings are held weekly. A quarto *Journal* is published at irregular intervals, and a volume of octavo *Proceedings* annually. President, Samuel G. Dixon, M.D.; secretary, Edward J. Nolan, M.D., Logan Square, Philadelphia, Penn. The museum is open every day to the public free of charge, and the resources of the library are placed freely at the service of students.

NAVAL ACADEMY, UNITED STATES, at Annapolis, Md., established 1845, had at the close of the academic year 1899-1900 an enrolment of 211 cadets. The library contained 39,614 volumes, an increase of about 4100 books for the year, among which was a library of about 3000 books tracing the history of electricity. This collection, which was presented by three alumni of the academy, is important from a historical and antiquarian point of view, as well as from a scientific one, being largely made up of the volumes in which the early philosophers, students, and inventors first announced to the world their theories and the results of their studies in the field of electricity. The work of rebuilding the academy proceeded slowly during the year owing to various delaying causes, but is now expected to make rapid progress. The plan calls for the demolition of practically all the present buildings, and the erection of barracks, armory, boat-house, chapel, academic, engineering, physics, and chemistry buildings, power plant, and storage warehouse, at a total cost of about \$10,000,000. (See ARCHITECTURE.) The superintendent of the Naval Academy has recommended that no physical disqualifications of naval cadets shall be waived. During the past ten years there seems to have been a marked deterioration in the physical condition of the graduating cadets, due to the fact that, there being now more vacancies than graduates, a vigorous weeding-out policy which was formerly necessary has fallen into disuse. The superintendent further recommends that no cadet shall be appointed under 15 or over 18 years of age, and that the course shall be four years and the cadets graduated as ensigns. He believes that to keep young men under military tutelage until they reach the present advanced age of final graduation is to ruin their power to assume responsibility. In reference to the adoption of a four-year course, the chief of the Bureau of Navigation reports that "the history of the present system of the 'two-year course at sea' is such as to convince any one of its injudiciousness, of its wastefulness, and its injustice to the officer. It should be recalled that the six-year course was not adopted because it was thought to be excellent in itself. It was adopted as an expedient to cut down the number of graduates from the Naval Academy at a time when the annually occurring vacancies were few. The uselessness of the additional two years 'at the Naval Academy,' required by the law, was such that the department has never given it anything but a technical compliance." The present superintendent of the Naval Academy is Commander Richard Wainwright, U.S.N., who succeeded Rear-Admiral F. V. McNair, U.S.N., on March 15, 1900.

NAVAL ARCHITECTS AND MARINE ENGINEERS, SOCIETY OF, organized in 1893 for the promotion of ship-building and marine engineering, had at the close of 1900 a membership of 800. The society publishes *Transactions*. General meeting for 1901 at New York in November. President, Clement A. Griscom; secretary, Francis T. Bowles, U.S.N., 12 West Thirty-first Street, New York City.

NAVAL ORDER OF THE UNITED STATES was organized in 1890 and the general commandery in 1893. There are State commanderies in Massachusetts, Pennsylvania, New York, California, and Illinois, and in the District of Columbia. The members are (1) commissioned officers, midshipmen, and naval cadets who were in actual service in the navy or marine corps during the period of any of the wars in which the United States has been engaged, and their male descendants; (2) enlisted men who have received the naval medal of honor for bravery in the face of the enemy. The next triennial congress is to be held in New York in 1901. General commander, Rear-Admiral John G. Walker; general recorder, Lieutenant-Commander Leonard Chenery (University Club, New York). New York Commandery: Commander, Admiral George Dewey; recorder, S. Hubbard, U.S.N. (108 Fifth Avenue).

NEBRASKA, a central western State of the United States, has an area of 77,510 square miles. The capital is Lincoln. Nebraska was organized as a Territory May 30, 1854, and admitted as a State March 1, 1867.

Agriculture.—The following shows the production and value of the principal crops for 1900: Corn, 210,430,064 bushels, \$65,233,320; wheat, 24,801,900 bushels, \$13,145,007; oats, 37,778,572 bushels, \$9,066,857; barley, 587,382 bushels, \$193,836; rye, 867,237 bushels, \$346,895; buckwheat, 82,480 bushels, \$52,787; potatoes, 9,664,446 bushels, \$4,735,579; and hay, 2,639,489 tons, \$13,593,368. Nebraska ranked third among the States in the production of corn. The extraordinarily rapid rate at which the winter wheat acreage gained on that of the spring wheat has resulted in a special investigation, which showed that there was no material change in the annual production of wheat, and that the 590,575 acres added to the winter wheat area have been at the expense of the spring variety. The wool clip for 1900 was estimated as follows: Number of sheep, 315,937; wool, washed and unwashed, 2,448,462 pounds; scoured wool, 856,962 pounds.

Industries.—New manufactories established during 1900 included an agricultural implement factory, a shoe factory, furnace works, shirt and overall factory, flour and cereal mill, sugar-beet syrup factory, and glove and mitten factory. Nebraska had three beet-sugar factories in 1900, with a combined capacity of 1200 tons of beets per day. Conservative estimates place the value of the jobbing trade for the year at \$62,500,000, and the value of the manufactured output, including smelter and packing-house products, at \$110,000,000. Hogs packed and marketed at Omaha and Nebraska City during the year ended March 1, 1900, numbered 2,428,419. In 1899 there were 238 manufacturers of cigars and 44 of tobacco, and their combined output for the calendar year was 20,436,629 cigars and 45,352 pounds of smoking tobacco. The amount of spirits rectified during the fiscal year ended June 30, 1900, was 448,240 gallons; distilled spirits gauged, 4,921,522 gallons, and fermented liquors produced, 238,848 barrels. Limestone quarrying showed a decidedly increased yield during 1899, the value of the product being \$125,017, as compared with \$78,493 in 1898. Perhaps the most important accessory to the live-stock industry recently inaugurated in Nebraska is the mammoth sheep barns and feeding lots established by the Burlington Railroad near Lincoln. The barns are capable of sheltering 20,000 or more sheep, and the feeding lots are for the accommodation of sheep shippers.

Commerce.—Imports of merchandise at Omaha during the fiscal year ended June 30, 1900, aggregated in value \$176,910; exports, \$36,158; imports at Lincoln, \$23,661; total foreign trade, \$236,729; total imports, \$200,571. This represents a decrease in imports for the year of \$194,254, and in exports of \$214,633.

Railways.—The new railway construction reported for the calendar year 1900 amounted to 102.47 miles, giving the State a total mileage of 5700.89.

Banks.—On October 31, 1900, there were 110 national banks in operation and 71 in liquidation, and the capital stock aggregated \$9,940,000; circulation outstanding, \$4,220,784; deposits, \$45,187,819; and reserve held, \$18,313,550. The State, trust, and savings banks, on June 30, 1900, numbered 405, and had capital, \$7,005,450; deposits, \$25,256,035, and resources, \$34,589,288. Exchanges at the clearing houses at Omaha and Hastings for the year ending September 30, 1900, aggregated \$324,586,910, an increase over the preceding year of \$8,018,380. In 1900 there were 60 building and loan associations, with 13,813 members, and assets aggregating \$3,332,781.

Finances.—The balance in the State Treasury on November 30, 1900, was \$615,018. The bonded debt had been entirely paid during the year, and the balance in the sinking funds was \$56,165. The floating indebtedness represented by State warrants amounted to \$1,727,510, of which warrants the school fund had invested in \$1,165,762, thus practically putting the State upon a cash basis so far as concerned the purchase of supplies and the maintenance of State institutions.

Education.—The school census of 1899 gives a total of 372,764 children enumerated. The enrolment in the public schools was 277,765, and the average daily attendance, 146,139. There were 9192 teachers, 6710 buildings used as school-houses, and public school property valued at \$9,215,220. The school revenue was \$3,737,950, and the expenditures, \$3,815,593, of which \$2,498,766 was for teachers' and superintendents' salaries. The average expenditure per pupil for the whole school year was \$22.52. There were 233 public high schools, with 515 teachers and 13,592 secondary students; 15 private secondary schools, with 67 teachers and 677 secondary students; 1 normal school, with 18 teachers and 657 students in normal courses; and 4 private normal schools, with 27 teachers and 1592 students in normal courses. Eleven universities and colleges for men and for both sexes reported 213 professors and instructors, 2031 preparatory, collegiate, and graduate students, and a total income of \$270,376. The professional schools comprised 3 theological schools, with 13 instructors and 53 students; 2 law schools, with 52 instructors and 170 students, and 3 medical schools, with 84 instructors and 238 students. The tax levy for the support of the State University is 6½ cents per \$100, the largest tax levied for this purpose in any State.

Population.—The population of the State, according to the United States census

was 1,068,539 in 1900, as against 1,058,910 in 1890, representing an increase for the decade of 9629, or 0.9 per cent. The small increase shown is probably due to "padding" in the census of 1890. The increase from 1880 to 1890 by the census was 606,508, or 134.1 per cent., and from 1870 to 1880, 329,409, or 267.8 per cent. The population of the three largest cities in 1900 was: Omaha, 102,555; Lincoln, 40,169, and South Omaha, 26,001. The population of Omaha has apparently decreased 37,897, and of Lincoln, 14,985, since 1890.

Elections.—The State election in 1900 resulted in a victory by 851 plurality of the Republican candidate for governor, Charles H. Dietrich, over Poynter, his Fusionist opponent. Dietrich received 113,869 votes and Poynter 113,018. The remainder of the Republican ticket was elected by an average plurality of about 4000. The vote for Congressmen was exceedingly close, four out of six of the Congressmen elected winning their seats by pluralities varying from 175 to 600. Five of the six representatives, however, who served in the 56th Congress were returned to the 57th. A. C. Shallenberger (Fusion) was nominated and elected in place of R. D. Sutherland (Pop.). In the 57th Congress Nebraska will be represented by 2 Republicans and 4 Fusionists. In 1900 the Legislature consisted, in the Senate, of 21 Republicans and 12 Fusionists, and in the House of 52 Republicans and 48 Fusionists. In 1901 the Legislature will consist, in the Senate, of 18 Republicans and 15 Fusionists, and in the House of 53 Republicans and 47 Fusionists. In the national election McKinley received 121,835 votes, and Bryan 114,013. In 1896 McKinley received 102,304 votes and Bryan, 115,880. In 1896, therefore, Bryan received a plurality of 13,576, while in 1900 McKinley received a plurality of 7822.

State Officers and National Representatives.—State officers for 1900: Executive—governor, William A. Poynter; lieutenant-governor, E. A. Gilbert; secretary of state, W. F. Porter; treasurer, J. B. Meserve; auditor, J. F. Cornell; attorney-general, C. J. Smythe; adjutant-general, P. H. Barry; superintendent of education, W. R. Jackson—all Populists except Gilbert (Silver Rep.) and Smythe (Dem.).

Supreme Court: Chief justice, T. L. Norval (Rep.); associate justices, J. J. Sullivan (Dem.) and S. A. Holcomb (Fusion); clerk, D. A. Campbell (Rep.).

State officers for 1901: Executive—governor, Charles H. Dietrich; lieutenant-governor, E. P. Savage; secretary of state, George W. Marsh; treasurer, William Stuefer; auditor, Charles Weston; attorney-general, F. N. Prout; superintendent of education, W. R. Jackson; commissioner of public lands, G. D. Follmer—all Republicans.

Judiciary: Same as for 1900, except that L. Herdman (Dem.) replaces Campbell as clerk.

Congressional representatives for 1900 (56th Congress): Republicans, E. J. Burkett (Lincoln) and David H. Mercer (Omaha); Populists, William L. Stark (Aurora), R. D. Sutherland and William Neville (North Platte); Democrat, John S. Robinson (Madison).

Congressional representatives for 1901 (57th Congress): Same as for 1900 except that A. C. Shallenberger (Pop.), from Alma, replaces R. D. Sutherland.

Senators for 1900 (56th Congress): John M. Thurston (until 1901), Republican, and William V. Allen (by governor's appointment till Legislature meets).

Senators for 1901: To be elected by the Legislature, which is Republican.

NEBRASKA, UNIVERSITY OF, at Lincoln, Neb., founded 1869. In August, 1900, Dr. E. Benjamin Andrews assumed the chancellorship of the State university. On its material side the university has had a prosperous growth during the past academic year. A new State law, in operation from January 1, 1900, grants a levy of 1 mill per dollar for the support of the university in place of the former levy of three-eighths of a mill. This amounts to \$175,000, and there was also received \$50,000 from university endowments and investments and \$35,000 from the United States government under the Hatch and Morrill bills, from tuition fees, etc. Among recent new buildings is the Soldiers' Memorial Hall—an addition to Grant Memorial Hall—in which a new pipe-organ, presented by alumni, has been placed. A new agricultural experiment station has been built, and expensive improvements have been made on buildings and grounds. The additions to the university library during the last biennium were 10,000 volumes, the total collection now being 50,000 volumes. The university museum collections are reported as having grown steadily. The herbarium contains 100,000 specimens, and has grown large enough to take rank as a distinct part of the university. The student attendance at the close of the academic year 1899-1900 is claimed at 2209, distributed among graduate, college, law, industrial, art, and music departments, and including 282 students in the summer session. No satisfactory comparison can be made with the attendance at other State institutions, since the summary given in the biennial report of the regents includes preparatory students and those doing work not included in a full college course. The number of students taking regular college courses is probably much smaller than the figures given above. Several important changes affecting entrance requirements,

curricula, and administration have recently been made. The entrance requirements for the "colleges" have been raised two points, and instead of twenty-eight points in required subjects being demanded, the requirements now call for seventeen points in required and eleven points in optional subjects. Twenty-four out of thirty departments in the university are now offering graduate instruction. In the academic department the group system has been abolished, and the student has free election of studies after the first year. In the law school the lecture system has been practically abandoned. The State Supreme Court has been asked to raise the requirements for admission to the bar of the State to three years' work, in order that the school might advance its requirements for graduation. The university assumed control in September, 1899, of the affiliated School of Fine Arts.

NEBULÆ. See ASTRONOMICAL PROGRESS.

NEGRO PROBLEM. For a discussion of the industrial and social condition of negroes in the United States and the outlook for their future development, see ALABAMA (paragraph Montgomery Conference). For a biography of the most distinguished living representative of the negro race and an account of his work in uplifting his people, see WASHINGTON, BOOKER T., and TUSKEGEE NORMAL AND INDUSTRIAL INSTITUTE. An interesting judicial decision, affirming the right of negroes to be represented upon juries, will be found under TEXAS (paragraph Right of Negroes to be Impannelled for Jury Duty). An account of some recent negro legislation will be found under articles VIRGINIA and SOUTH CAROLINA (paragraph Legislature).

Race Disturbances.—Lynchings took place in many of the Southern States during the year, and were in general accompanied by unnecessary acts of cruelty. Race feuds took place in New Orleans and Akron, O., and in New York City. In New Orleans on July 24 a negro killed eight persons before he was himself shot. As a result, mobs of whites and blacks battled in the streets, and some seventy persons were wounded. The race riots in New York on August 15 and 16 were not so serious in themselves as those in New Orleans, but were of considerably greater significance for the reason that it had generally been asserted that the negro problem was confined to the South, and that in the North there was no race feeling of any account. The animosity, however, shown by the police in New York toward the negroes and also the brutal handling of negroes by white mobs seemed to show conclusively that not a sudden burst of rage, but the outbreak of a prejudice of long continuance, was responsible for the outrages. In Akron, O., on August 22 a negro's attempted assault on a white girl enraged the whites to such an extent that the city hall and other buildings were destroyed in the attempted capture of the negro. Smaller riots took place at Liberty City in Georgia and in Georgetown, S. C.

NETHERLANDS, THE KINGDOM OF THE, is situated in the northwestern part of Europe, between Germany, Belgium, and the North Sea. It has a total area of 12,648 square miles, and is divided into 11 provinces. Its total population at the beginning of 1899 was 5,074,632, or 401 per square mile. Of the total population in 1899, only 34.3 per cent. lived in towns with a population of over 20,000. The capital of the kingdom is The Hague, with a population of 199,285 in 1899. The largest towns in 1899 were Amsterdam, 512,953; Rotterdam, 309,309, and Utrecht, 100,066. The government of the kingdom is that of a constitutional and hereditary monarchy, the executive power being vested in the sovereign, while the responsibility for legislation is shared by the sovereign with the Parliament. The latter consists of two chambers, the Upper, or First, and the Second Chamber. The First Chamber consists of 50 members, who are elected by the provincial governments. Its functions are confined merely to approving or rejecting bills introduced by the government or the Second Chamber. The latter consists of 100 members, elected directly by the people on a property qualification. There is also a state council, consisting of 14 members, who are appointed by the sovereign. Its functions are of an advisory nature, and it is presided over by the sovereign.

Agriculture.—Out of a total area of 3,255,198 hectares, over 2,100,000 were devoted in 1897 to agricultural purposes. Of this area, 864,137 hectares were under grains. 1,185,568 hectares were pasture, and 61,517 were orchards and gardens. The principal crops for that year were as follows in hectolitres (2.84 bushels): Wheat, 1,512,000; rye, 4,204,000; barley, 1,316,700; oats, 5,682,500; potatoes, 27,461,000; sugar beets, 1,159,931 tons, and tobacco, 1,786,000 kilogrammes. The total market value of the crops in 1898 was estimated at 161,554,000 guilders. The exports and imports of the principal grains in the same year were given as 229,995,000 guilders and 338,514,000 guilders respectively.

Industries.—According to an official report for 1898, there were in that year 6934 manufacturing establishments, employing 89,940 persons, including 17,405 females. During 1898-99 the output of the 31 sugar mills amounted to 1,497,640 metric centners of raw sugar; the 8 sugar refineries produced during the same period 1,980,670 metric

centners of refined sugar. The sugar is mostly exported to Great Britain, Norway, and the United States. The mining industry is comparatively insignificant, and is mostly confined to the province of Limburg, where coal is mined in inconsiderable quantities. The fisheries of the Netherlands are very extensive. According to a report for 1898, there were 5385 vessels and 18,709 men engaged in fishing. The most important catches are herrings, oysters, and anchovies, which are largely exported. The total value of the herring catch in the North Sea for 1898 was estimated at 6,370,532 guilders.

Commerce and Communication.—The foreign commerce of 1899 shows an increase in the weight of both the exports and the imports. No official statistics for the value of the foreign trade are available, as the official returns give only the weight; but estimates place the value of the imports and exports at £159,707,042 and £131,887,794 respectively. The principal articles of import in 1899 were grains, coal, drugs, manure, and metals. The most important articles of export are grains, coal, and sugar. The trade of the Netherlands with the United States is quite extensive, and shows a gradual increase for the last three years. The total value of the imports from the Netherlands to the United States for the calendar year 1900 was \$17,273,111, against \$15,278,069 in 1899 and \$13,306,832 in 1898. The exports from the United States to the Netherlands have increased from \$72,771,855 in 1898 to \$83,721,501 in 1900. The number of vessels entered at the ports of the kingdom in 1898 was 11,067, with a tonnage of 8,710,878. The number of vessels cleared in the same year was 11,057, with a tonnage of 8,646,804. About 50 per cent. of the shipping is entered at Rotterdam. It is generally expected that the establishment of direct communication with South America in 1899 and the proposed improvement of the North Channel will prove important factors in the further development of the commerce of the country. The merchant marine of the Netherlands at the end of 1898 consisted of 429 sailing vessels, with a tonnage of 88,500, and 176 steamers, with an aggregate tonnage of 214,170. Communication in the Netherlands is mostly effected by waterways, in which there were included upward of 5000 miles of canals. The total railway mileage in 1898 was 1838, of which the state owned 1058 miles. The total receipts and expenditures of the state lines in 1898 were 22,044,000 guilders and 17,509,000 guilders respectively. The total amount of capital invested in the state lines up to 1898 was 270,509,000 guilders. There were in 1898, 816 miles of steam and horse tramways, which carried during the year 48,600,000 passengers and 471,000,000 kilogrammes of freight.

Religion and Education.—The Dutch Reformed Church predominates in the Netherlands, and numbers among its adherents over 40 per cent. of the entire population, including the royal family. The constitution of the kingdom provides for entire liberty of conscience, and the state subsidizes the Roman Catholic and Jewish churches as well as the Protestant churches. The country is well provided with educational institutions for primary as well as secondary education. Instruction is neither free nor compulsory, but the fee charged is so small and the standard of instruction so high that the percentage of illiteracy is comparatively insignificant. According to an act passed about 20 years ago, every town with a population of over 20,000 must be provided with at least one gymnasium, in which, besides Latin and Greek, there are also taught from 3 to 4 modern languages. According to an official report of 1898, there were 4 universities, with over 2800 students, and a teaching staff of 165; for secondary education there were 29 gymnasia, with over 2500 pupils, including 160 female students. There were also 123 schools for working people, with over 16,000 students, and a teaching staff of 1166; 11 navigation schools, with over 877 pupils; 73 middle-class schools, with an attendance of nearly 10,000, and a polytechnicum, with nearly 600 students. Elementary education is partly provided by the state and partly by ecclesiastical bodies and private persons. The total number of elementary schools at the end of 1898 was 4544, of which 3096 were entirely supported by the state, 18 were subsidized, and 1430 were private. The total number of pupils in the elementary schools in the same year was 379,622 boys and 351,066 girls. The total amount of money expended by the state on education, according to the budget for 1900, was 10,499,739 guilders. Besides the above-named sum appropriated by the state, the educational institutions receive an annual grant of about 13,000,000 guilders from the communities, which is a very large sum, considering their population.

Finance.—The budget for 1900 gives the revenue and expenditure as 144,723,185 guilders and 151,260,244 guilders respectively, showing a slight decrease in the expenditures and an increase in the revenue as compared with the budget for 1899. The main items of expenditure are: National debt, 35,118,640 guilders; *Waterstaat*, commerce, and industry, 27,421,265 guilders; finance, 25,283,591 guilders; war, 22,584,783 guilders, and marine, 15,950,262 guilders. The revenue is chiefly derived from direct taxes, which include taxes on land, personal property, and incomes from

trades and professions, and was estimated in the budget at nearly 35,000,000 guilders; excise duties on sugar, liquors, etc., 47,440,000; indirect taxes, 21,000,000 guilders, and state railways, 4,306,190 guilders. The revenue from the colonies, which was formerly a very important item in the budget, has of late dwindled to nothing, and even in some cases gives place to a deficit. The public debt on January, 1900, amounted to 1,160,246,800 guilders. The provinces and communes enjoy financial autonomy to the extent of preparing their own budgets.

Army and Navy.—The strength of the regular army on a war footing in 1899 was 69,316, including 46,974 infantry, 17,180 artillery, and 2721 cavalry. The army is recruited partly by conscription and partly by enlistment, and is divided into a regular army and a militia, which is in turn subdivided into three parts, in accordance with the family conditions and responsibilities of the men. The navy of the Netherlands consisted in 1899 of 129 men-of-war, including 32 ironclads, and is used for the protection of the coasts of Netherland and the Indies. There has lately been some agitation for a larger navy, which is claimed to be indispensable in view of the Netherlands' vast colonial possessions. It may be doubted, however, whether such a luxury as a large navy can be afforded by the Netherlands at the present state of its finances.

History for 1900.—The betrothal of Queen Wilhelmina to Duke Henry of Mecklenburg-Schwerin was made public in the middle of October. The duke was born in 1876, and is the son of the late Duke Frederick Francis II. of Mecklenburg-Schwerin and the Grand Duchess Marie, a princess of the House of Schwarzburg-Rudolstadt. The duke is a lieutenant *à la suite* of the Prussian Chasseurs of the Guard and the Mecklenburg Fusiliers. This union between the royal family of the Netherlands and one of the oldest houses in Germany was looked upon with disfavor by a certain part of the Dutch population, who considered it as a preliminary step toward the absorption of the Netherlands by Germany, a country which has always evinced a tender regard for the kingdom. The attitude of the government toward the South African War was strictly neutral, although the sympathies of the Dutch people were unquestionably on the side of their struggling kinsmen. In reply to an appeal from Presidents Kruger and Steyn for intervention, the government expressed with regret the impossibility of any active intervention on its part, but promised its hearty co-operation with any movement toward the restoration of peace. On President Kruger's arrival at Lourenço Marques in September, the Dutch government placed at his disposal one of its warships, in which he made his journey to Europe. The States-General was opened on September 18. In her speech from the throne Queen Wilhelmina stated that although the Anglo-Boer War made expedient the sending of warships for the protection of the Dutch interests, the attitude of the government toward the Powers remains unchanged. A bill providing for the reclaiming of the entire area of the Zuyder Zee was submitted to the States-General in the autumn of 1900. The plan calls for the construction of a dyke about twenty-five miles long, at a cost of about \$100,000,000, and the subsequent draining off of the water from the enclosed area. Such a project in any other country would, perhaps, be regarded as highly impracticable, if not impossible; but in a land which owes its very existence to gigantic dykes and water fortifications it stands a fair chance of accomplishment. For relations with the colonies, see the articles COLONIES; DUTCH EAST INDIES; JAVA and CELEBES.

NEVADA, a Pacific slope State of the United States, has an area of 110,700 square miles. The capital is Carson City. Nevada was organized as a Territory March 2, 1861, and admitted as a State October 31, 1864.

Mineralogy.—The estimated amount of gold produced during the calendar year 1900 was 113,681 fine ounces, valued at \$2,350,000; and of silver, 1,229,756 fine ounces, value, \$750,151. No coal has been produced in the State since 1894. The following shows the production of ores and tailings during the year ended September 30, 1900: Ores, 131,370 tons, \$1,735,082; tailings, 54,319 tons, \$144,165; total, 185,689 tons, \$1,880,147. The total State and county tax on mines for the year was \$3,313.53.

Agriculture.—The live-stock industry is one of the largest industries now in the State. The *Bulletin* of the National Association of Wool Manufacturers estimated the wool clip of 1900 as follows: Number of sheep, 612,387; wool, washed and unwashed, 4,592,903 pounds; wool, scoured, 1,424,400 pounds.

During the calendar year 1900 the production of wheat was 991,196 bushels, valued at \$693,837, or 70 cents per bushel; potatoes, 273,468 bushels, valued at \$153,142, or 56 cents per bushel; and hay, 375,022 tons, valued at \$2,887,669, or \$7.70 per ton.

Commercial Failures.—The following statement gives comparative statistics of the failures of business concerns in the State for 1898, 1899 and 1900.

Year.	Number of Failures.	Number of Business Concerns.	Percentage of Failures.	Liabilities.
1898.....	2	1,141	0.18	\$2,970
1899.....	3	1,147	0.26	11,149
1900.....	3	1,181	0.25	5,502

From the above it is seen that there were 34 more business concerns in the State in 1900 than in 1899, and that the number of failures was the same in both years. Comparison with the records of other States shows that no State had a lower percentage of business failures in 1900 than Nevada.

Railways.—Returns from the tax assessors in 1900 shows that the total mileage of main track was 921.91, and of side track, 106.24. The total valuation of all railroad property in the State was \$8,314,383, and the total tax for State and county purposes was \$217,682.

Banks.—On October 31, 1900, there were three national banks organized, only one of which was in operation. The active capital was \$82,000; circulation outstanding, \$16,782; deposits, \$433,047, and reserve held, \$73,651. The State banks June 30, 1900, numbered 4, and had capital, \$370,000; deposits, \$1,474,337, and resources, \$2,071,864. There was one private bank, with capital, \$25,000; deposits, \$24,364, and resources, \$49,477.

Finances.—The total receipts at the State treasury during the calendar year 1900 were \$510,609, and expenditures, \$533,403, leaving a net balance in funds December 31, 1900, of \$246,159. The assessed valuations for 1900 were: Real estate, \$16,578,404; personal property, \$7,602,452; total, \$24,180,856, an increase of \$614,398 in property assessments within a year. In addition, the net proceeds of the mines were assessed in 1900 at \$105,900, making the total assessments of the year \$24,286,756. The total bonded debt of the State on December 31, 1900, was \$642,600, of which \$380,000 was irredeemable. Interest on this debt, together with outstanding warrants and deficiency claims, brings the total State debt up to \$676,709. Cash in the treasury applicable to the payment of the debt amounted to \$172,900, leaving a net debt of \$503,809.

Education.—For secondary education in 1899 there were 7 public high schools (1 less than in 1898), with 19 teachers and 423 secondary students; no private secondary schools or normal schools were reported. The only university in the State reported 23 professors and instructors, 331 preparatory, collegiate, and graduate students, and a total income of \$56,522.

Population.—The population, according to the United States census, was 45,761 in 1890, and but 42,335 in 1900, a decrease for the decade of 3426, or 7.5 per cent. The largest town is Reno, with a population in 1900 of 4500.

Elections.—There was no election for governor in Nevada in 1900. In 1898 Reinhold Sadler, the Silver-Republican candidate for governor, defeated Macmillan, his Republican opponent, by a plurality of 22. In the election for congressman in 1900, F. G. Newlands (Silver and Dem.), who represented Nevada in the 56th Congress, was re-elected for the 57th Congress. He received 5975 votes, while E. T. Farrington (Rep.) received 4190. In 1900 the Legislature consisted, in the Senate, of 4 Republicans, 10 Silver Democrats, and 1 Independent, and in the House of 10 Republicans, 2 Democrats, 16 Silver Democrats, and 2 Independents. In 1901 the Legislature will consist, in the Senate, of 5 Republicans, 1 Independent, and 9 Silver Democrats, and in the House of 5 Republicans, 3 Independents, and 23 Silver Democrats. In the national election of 1900 Bryan received 6347 votes, and McKinley, 3849. In 1896 Bryan received 8377 votes, and McKinley, 1938. Bryan's plurality, therefore, diminished from 6439 votes to 2498.

State Officers and National Representatives.—State officers for 1900: Executive—governor, Reinhold Sadler; lieutenant-governor, J. R. Judge; secretary of state, Eugene Howell; treasurer, D. M. Ryan; comptroller, S. P. Davis; superintendent of public instruction, Orvis Ring; adjutant-general, J. R. Judge, *ex-officio*; attorney-general, W. D. Jones—all Silver party, except Ring (Rep.).

Supreme Court: Chief justice, M. S. Bonnifield; associate justices, W. A. Massey, C. H. Belknap; clerk, *ex-officio*, Eugene Howell—all of the Silver party.

State officers for 1901: Same as for 1900.

Supreme Court: Same as for 1900, except that A. L. Fitzgerald (Silver) replaces W. A. Massey as associate justice.

Congressional representative for 1900 (56th Congress): F. G. Newlands (Silver), from Reno.

Congressional representative for 1901 (57th Congress): Same as for 1900.

Senators for 1900 (56th Congress): J. P. Jones (until 1903), from Gold Hill (Silver), and W. M. Stewart (until 1905), from Carson City (Ind.).

Senators for 1901 (57th Congress): Same as for 1900.

NEW BRUNSWICK, a province of the Dominion of Canada, with an area of 28,200 square miles and a population of (1891) 321,263. Capital, Fredericton, with a population estimated in 1900 at 7000. The province is administered by a lieutenant-governor and an executive council. It has only one chamber, a Legislative Assembly, of 46 members, elected on a property qualification. The province sends 10 members to the Dominion Senate and 14 to the House of Commons.

Industries and Agriculture.—The official returns for the fisheries for the calendar year 1898 (the last reported) give the total value of the catch at \$3,849,357, a decrease of nearly \$100,000 from the preceding year. The principal catch was: Herring, \$1,070,799; lobsters, \$531,524; sardines, \$423,742; smelts, \$351,050, and cod, \$311,326. The amount of bounty distributed in accordance with the act of 1891 was \$13,746 in 1898, while the federal revenue derived from the fisheries during the same year amounted to \$11,512. The total value of the fish exported in 1899 was \$618,414, against \$677,624 in 1898. The distribution of fry was 5,585,000, and the capital invested in the industry amounted to \$1,989,503. The mineral deposits of the province are comparatively insignificant. The principal minerals are gypsum and coal, the deposits of the latter being insufficient for profitable working. The agricultural returns for 1899 show the following crops: Oats, 5,147,691 bushels; potatoes, 4,071,200 bushels; turnips, 1,507,917 bushels; buckwheat, 1,413,018 bushels; wheat, 491,810 bushels, and barley, 114,183 bushels. There were in 1899, 25 creameries, with an annual output of 303,905 pounds of butter, valued at \$58,494, and 55 cheese factories, with an annual product valued at \$157,506.

Commerce.—The total value of imports for the fiscal year 1899 was \$5,440,733, against 4,925,662 in the preceding year. Of the total amount, \$3,201,440 came from the United States, and \$1,533,514 from Great Britain. Duties collected on imports during the year amounted to \$949,961. The exports have decreased from \$11,166,218 in 1898 to \$10,492,329 in 1899. The number of failures has fallen off from 62 in 1899 to 48 in 1900, with \$240,907 liabilities and \$100,825 assets. The merchant marine of the province consisted at the end of the fiscal year 1899 of 118 steamers and 802 sailing vessels, with a total net tonnage of 86,288.

Banks.—At the end of the fiscal year 1899 the province had 30 chartered banks and bank branches. There were also 43 post-office savings banks, with 6852 depositors and deposits amounting to \$2,365,909, and 5 government banks, with 17,635 depositors and \$6,132,648 deposits. The clearings for the year amounted to \$32,628,723.

Instruction and Charities.—The school system of the province is under the control of the Board of Education, composed of the lieutenant-governor, members of the executive council, the president of the University of New Brunswick, and the chief superintendent of education. The public schools are supported partly by government grants and partly by municipal aid and district assessments. The number of public schools at the end of the fiscal year 1899 was 1806, with an enrolment of 63,536, and an average daily attendance of 37,771. There were also 980 pupils in the grammar schools and 316 in the normal schools. The University of Mount Allison College had 175 students and an annual income of \$22,500. There were also 6 schools for Indian children, with 142 registered pupils. The total receipts for educational purposes amounted in 1899 to \$602,960, of which the government contributed \$193,730. Expenditures amounted to \$577,219. The charitable institutions of the province consisted of an industrial home for boys, 1 asylum for the insane, and 3 general hospitals, with a total number of 1880 inmates. The total receipts for charitable purposes amounted to \$72,816, of which \$45,217 was contributed by the government.

Finances.—The total revenue receipts for the fiscal year 1899 amounted to \$764,239. The main sources of revenue were the Dominion subsidies, \$483,501, and timber licenses and stumpage, \$160,656. The expenditures for the same year amounted to \$749,644. The main items of expenditure were: Education, \$202,705; public works, \$197,883, and interest not chargeable to the special fund, \$124,431. The gross debt of the province was \$3,324,986, and the total assets, excluding public buildings, was \$588,688, leaving a net debt of \$2,736,298, or \$8.51 per head.

NEW ENGLAND SOCIETY, founded in 1805, and incorporated in 1833, had in 1900, 1472 members. Annual meetings of the society are held in December. President, William E. Dodge; secretary, George Wilson, 32 Nassau Street, New York City.

NEWFOUNDLAND, a British colony of North America, comprising the island of that name and a part of Labrador. The total area of the island is estimated at 42,200 square miles, and that of Labrador at 160,000 square miles. The population of the island estimated at about 210,000 and of its dependency at about 5000. The capital of the colony is St. John's, with an estimated population of 31,142. The colony is administered by a governor and an executive council of not more than 7 members. There are two chambers in the colony, a Legislative Council, consisting of not more than 15 members, appointed for life, and a Legislative Assembly of 36 members, elected on manhood suffrage for a term of 4 years.

Industries.—For a long time the main industries of the colony were those connected with the fisheries. But with the opening of the railway the mineral deposits of the island have been gradually developed, and new industries have sprung up. The discovery of large deposits of roofing slate promises to give rise to a very important industry. The lumber trade and the manufacture of pulp are progressing rapidly. The island contains large deposits of coal, copper, and iron, and the day may not be far off when the mineral industry will have entirely superseded the fisheries. The latest returns for the fishery industry show a slight improvement over the preceding year. The principal article of export was codfish, \$4,445,031, and the total value of the catch was estimated at \$5,661,210, against \$4,925,786 in 1898. The total value of minerals exported was estimated at \$622,002.

Commerce.—The official returns for the fiscal year 1900 show a considerable increase in the commerce of the colony. The total value of imports was \$7,497,147, against \$5,938,336 in 1897. Of the total imports, \$2,805,490 came from Canada, \$2,224,353 from Great Britain, and \$2,017,524 from the United States. Exports for the same year amounted to \$8,627,576, against \$6,311,244 in 1899. The largest importer from Newfoundland is Brazil, with \$2,068,586; next comes Great Britain, with \$1,890,659; the United States, \$562,759, and Canada, \$473,940.

Railways and Telegraph.—The colonial railway had a total length of 638 miles in 1900, and is connected with the railway system of Canada by a steamer plying between Port-au-Basques and Sydney, on Cape Breton. The total length of the telegraph lines is nearly 1500 miles.

Finances.—The official returns for the fiscal year 1900 show a very encouraging state of affairs in the finances of the colony. The revenue amounted to \$2,213,334, an increase of about \$400,000 over 1898. The expenditure for the same year was \$1,983,445, leaving a surplus of nearly \$300,000, the largest surplus in the financial history of the colony. The debt of the colony amounted to over \$17,000,000.

French Shore Question.—On February 19 the insular Legislature renewed the *modus vivendi* of 1890, as it has done annually since its first ratification, but this year not without a struggle with the mother country. Impatience at the seemingly unnecessary delay on the part of Mr. Chamberlain engendered bitterness of feeling among the islanders, and the session was a stormy one, quieted only by the appearance of the governor, whose counsel determined the final action. Since the South African War caused so great anxiety at home and demanded so much care in management, the Legislature in a spirit of self-sacrifice yielded to the colonial secretary's plea for more time in order to free the home government of one of its many cares, and the dispute is still in abeyance.

As a result of the general elections of November 8, 32 seats were secured by the Liberals, and 4 by the Conservatives. The sum of £10,000 was contributed by the colony toward the South African Patriotic Fund.

NEW GUINEA, or PAPUA, a large island, is situated in the Pacific Ocean north of Australia, from which it is separated by the Torres Strait. It is about 1500 miles long and 430 miles across at its greatest breadth, and covers an area of over 300,000 square miles. Politically, New Guinea is divided between Great Britain, Germany, and Holland, and the statistics for the separate divisions will be given under their respective heads.

British New Guinea covers an area of 90,540 square miles, of which 87,786 square miles are on the southeastern part of the island and 2754 square miles on the adjacent small islands, the most important of which are Kiriwina, Woodlark, Normanby, Goodenough, Fergusson, St. Aignan, Rossel, and Sudest. The native population of British Guinea is estimated at 500,000, and the European at 500. The principal industries are gold mining and the pearl-shell fishery. The output of gold for 1898 amounted to £25,600. The rubber industry is also important, and sandal wood is exported to a considerable extent. The trade is principally with Queensland and New South Wales, there being no direct communication with Great Britain. The imports and exports for 1898-99 amounted to £52,170 and £68,496 respectively, against £46,971 and £49,859 in 1897-98. The revenue for 1900 was estimated at £12,500, and the expenditures at £27,000. The constitution of British New Guinea is that of a crown colony; but owing to the fact that a considerable part of the cost of administration is defrayed by the Australian colonies of Queensland, Victoria, and New South Wales, the government of the colony is to a certain extent influenced by them. At the head of the administration is a lieutenant-governor, assisted by an executive and a legislative council. For administrative purposes the colony is divided into four magisterial districts, and there is a central court at Port Moresby. The laws in operation in the colony are the same as those of Queensland, and all new laws are submitted to the governor of Queensland.

Kaiser Wilhelm's Land (the official name of German New Guinea) occupies the northern section of the eastern part of the island, covering an area of 69,027 square

miles. Its population in 1898 was estimated at 110,000, including 58 Europeans, of which 53 were of German origin. The seat of the government was transferred in 1899 from Stephansort to Friederich-Wilhelmshafen. The principal articles of cultivation are coco-palms, cotton, tobacco, and coffee. There is also an abundance of valuable woods, as areca, sago-palm, bamboo, ebony, and others. Copra, mother-of-pearl, and trepang are used as a medium of exchange by the natives. Communication with Europe is maintained by a steamer of the North German Lloyd Company, which visits the protectorate every two weeks. The police consists of 1 officer and 24 natives. The imports for 1898 amounted to 362,000 marks, and the exports to 320,000 marks. The revenue for 1900-01 for the New Guinea Protectorate and Bismarck Archipelago was estimated at 923,000 marks, including a subvention of 848,500 marks from the German government. In April, 1899, the protectorate was taken over from the German New Guinea Company by the German government.

Dutch New Guinea includes the western part of the island, an area of 151,789 square miles, or about 50 per cent. of the total area. The population in 1898 was estimated at 202,440, including 307 Europeans, 566 Chinese, and 124 Arabs. A considerable part of the Dutch possessions is under the rule of native sultans. The soil is supposed to be very fertile, but so far very little of it is cultivated, and the agricultural products are insignificant. There were in 1898, 8 schools for the instruction of the natives, with 542 pupils. Administratively, it forms a part of the "outposts" of the East Indies, and is administered partly by Dutch officials and partly by native chiefs. See COLONIES.

NEW HAMPSHIRE, a New England State of the United States, and one of the original thirteen, has an area of 9305 square miles. The capital is Concord.

Agriculture.—The following shows the production and value of the principal crops for 1900: Corn, 934,768 bushels, \$523,470; wheat, 8085 bushels, \$7438; oats, 995,148 bushels, \$378,156; barley, 102,786 bushels, \$68,867; rye, 15,168 bushels, \$12,438; buckwheat, 61,578 bushels, \$32,021; potatoes, 1,809,516 bushels, \$959,043, and hay, 518,586 tons, \$8,038,083. The *Bulletin* of the National Association of Wool Manufacturers estimated the wool clip of 1900 as follows: Number of sheep, 76,383; wool, washed and unwashed, 496,490 pounds; scoured wool, 223,421 pounds.

Industries.—The total number of industries in the State in 1900 was 1331; amount of capital invested, \$86,632,297; cost of material used, \$58,404,515; number of wage earners, 73,485; total wages paid, \$26,144,340; number of salaried clerks and officials, 1653; total salaries, \$1,979,802; value of manufactured product, \$103,429,553. There were 831 lumber plants, with an aggregate capital of \$12,329,843 and 8932 employees. A total of \$2,519,609 was paid out in wages, and the value of the lumber product of all the plants was \$10,907,438. The value of the granite output for 1899 was \$802,636, an increase in a year of \$119,041. Most of the product was used for building purposes and monumental work. In 1899 there were 57 cigar factories and 5 tobacco factories, and their combined production was 8,403,538 cigars and 1935 pounds of smoking tobacco. The total amount of distilled spirits gauged was 74,776 gallons, and fermented liquors produced, 204,076 barrels.

Commerce.—During the fiscal year ending June 30, 1900, the imports of merchandise at the port of Portsmouth aggregated in value \$48,840, an increase over the total for the previous year of \$31,826; exports, none.

Railways.—The new railway construction reported for the calendar year 1900 amounted to 18.54 miles, giving the State a total mileage of 1193.15.

Banks.—On October 31, 1900, there were 55 national banks in operation and 11 in liquidation, and the capital stock aggregated \$5,500,000; circulation outstanding, \$4,501,169; deposits, \$14,207,553, and reserve held, \$4,574,996. The State banks June 30, 1900, numbered 9, and had capital, \$560,000; deposits, \$989,536, and resources, \$1,859,849; and mutual savings banks, 58, with depositors, 136,544; deposits, \$53,896,711, and resources, \$62,063,071.

Finances.—Cash balances and receipts at the State treasury during the fiscal year ended June 30, 1900, amounted to \$1,627,271. The total disbursements were \$1,170,744, leaving a balance, July 1, 1900, of \$456,527. The net indebtedness of the State on June 1, 1900, was \$1,118,798, a reduction of \$216,269 within the year. The chief sources of State revenue were the State tax, \$425,000, and the railroad tax, \$148,772.

Insurance.—On January 1, 1900, the number of insurance companies doing business in the State was 195, and fraternal associations, 32. The amount of risks written on lives and property in 1899 was \$133,681,667; assessments and premiums received, \$3,066,322; losses and claims paid, \$1,750,101. The entire amount of fire risks written in the State by authorized companies for the ten years ending December 31, 1899, was \$855,929,843; premiums received, \$10,922,460, and losses paid, \$5,294,394. Life risks written during the same period amounted to \$38,276,419; premiums received, \$8,477,350, and losses paid, \$3,866,701. The income to the State from all authorized companies aggregated \$27,452 in 1890, and \$56,746 in 1899. The following is a comparative statement of fire insurance in New Hampshire for 1899 and 1900:

Items.	1899.	1900.
Risks written.....	\$103,644,180	\$105,608,394
Premiums received.....	1,368,190	1,344,888
Losses incurred.....	744,909	839,145

Penal and Charitable Institutions.—On September 30, 1900, the inmates of the insane asylum numbered 425. The number of prisoners in the State prison averaged 140 for the year, a lower average than usual. During the year the State Board of Charities investigated the needs of 600 children, and located over 500 of them in private asylums.

Education.—The school census of 1899 showed a total of 69,783 children between the ages of 5 and 16 enumerated. The enrolment in the public schools was 65,193, and the average daily attendance, 47,733. There were 2970 teachers, 1902 buildings used as school-houses, and public school property valued at \$3,658,143. The school revenue was \$999,556, and the expenditures, \$1,051,265, of which \$677,767 was for teachers' and superintendents' salaries. The average expenditure per pupil for the whole school year was \$22.02. There were 52 public high schools (the same number as in 1898), with 165 teachers and 3464 secondary students; 31 private secondary schools, with 170 teachers and 2445 secondary students, and 1 public normal school, with 8 teachers and 103 students in normal courses. Two colleges for men reported 59 professors and instructors, 634 preparatory, collegiate, and graduate students, and a total income of \$113,000; and 1 school of technology reported 21 professors and instructors, 120 preparatory, collegiate, and graduate students, and a total income of \$71,998. The only professional institute was a medical school, with 17 instructors and 131 students.

Population.—According to the United States census, the population in 1890 was 376,530; in 1900, 411,588; increase for the decade, 35,058, or 9.3 per cent. The three largest cities, with population in 1900, are: Manchester, 56,987; Nashua, 23,898, and Concord, 19,632.

Elections.—In the State election of 1900 Chester B. Jordan, the Republican nominee for governor, received 53,891 votes, and Frederick E. Potter, the Democratic nominee, 34,956. The governor's plurality was thus 18,935. This was a much larger plurality than in 1898, when the Republican plurality was 9077. No members of the State government, except the governor, were elected in 1900. One of New Hampshire's two representatives in the 56th Congress was returned to the 57th Congress. In 1899 the State Legislature consisted, in the Senate, of 22 Republicans and 2 Democrats, and in the House of 249 Republicans and 149 Democrats. In 1901, as a result of the State elections, the Republican majority will be still further increased, and the Legislature will consist, in the Senate, of 23 Republicans and 1 Democrat, and in the House of 300 Republicans and 97 Democrats. In the national election McKinley received 54,803 votes, and Bryan, 35,489. In 1896 McKinley received 57,444 votes, and Bryan, 21,650. McKinley's majority was thus reduced from 35,794 to 19,314. But the plurality of 1900 was exceedingly large when compared with the average Republican pluralities of previous years, which between 1876 and 1892 had averaged less than 4000.

State Officers and National Representatives.—State officers for 1900: Executive—governor, Frank W. Rollins; secretary of state, E. N. Pearson; treasurer, Solon A. Carter; adjutant-general, A. D. Ayling; attorney-general, E. G. Eastman—all Republicans.

Supreme Court: Chief justice, I. N. Blodgett (Dem.); associate justices, W. M. Chase (Dem.), Frank N. Parsons (Rep.), R. G. Pike (Rep.), R. R. Wallace (Rep.), R. J. Peaslee (Dem.), and John E. Young (Rep.); clerk, A. J. Shurtleff.

State officers for 1901: Executive—governor, Chester B. Jordan; secretary of state, E. N. Pearson; treasurer, S. A. Carter; adjutant-general, A. D. Ayling; attorney-general, E. G. Eastman; superintendent of education, C. Folsom; secretary Board of Agriculture, N. J. Bachelder; commissioner of insurance, J. C. Sinclair—all Republicans.

Supreme Court: Same as for 1900.

Congressional representatives for 1900 (56th Congress): Cyrus A. Sulloway (Manchester) and F. G. Clarke (Peterboro)—both Republicans.

Congressional representatives for 1901 (57th Congress): Cyrus A. Sulloway (Manchester) and F. D. Currier (Canaan)—both Republicans.

Senators for 1900 (56th Congress): W. E. Chandler (until 1901), from Concord, and J. H. Gallinger (until 1903), also from Concord—both Republicans.

Senators for 1901 (57th Congress): J. H. Gallinger (until 1903); vacant.

NEW JERSEY, a middle Atlantic State of the United States, has an area of 7815 square miles. New Jersey was one of the original thirteen States. The capital is Trenton.

Mineralogy.—The output of iron ore in 1899, 256,185 long tons, was 19,253 long tons less than the production of the preceding year. The ore was all of the magnetite variety, and the value was \$814,920. New Jersey ore brought a better price in 1899 than that of any other State, the value per ton being \$3.18. Quarrying yielded granite to the value of \$779,822; limestone, \$153,025; sandstone, \$147,768; and slate, \$1600.

Agriculture.—The following shows the production and value of the principal crops for 1900: Hay, 499,102 tons, \$8,010,587; corn, 8,493,012 bushels, \$3,821,855; oats, 2,812,089 bushels, \$871,748; wheat, 2,344,582 bushels, \$1,734,991; potatoes, 3,342,015 bushels, \$2,005,209; rye, 1,029,000 bushels, \$565,950, and buckwheat, 160,080 bushels, \$94,447. The *Bulletin* of the National Association of Wool Manufacturers estimated the wool clip of 1900 as follows: Number of sheep, 41,684; wool, washed and unwashed, 208,270 pounds; scoured wool, 110,384 pounds.

Industries.—During 1900, 17 new silk mills were built, as follows: One for velvets, 2 silk throwing, 7 for broad silks, 3 for ribbons, 1 for hat bands, 2 for silk and satin, and 1 for dyeing and finishing. The new cotton mills established in 1900 numbered 3, and contained an aggregate of 11,500 spindles and 410 looms. During 1900 there were 231 commercial and business failures, representing .62 of 1 per cent. of the 37,304 business concerns in the State. In the preceding year the failures numbered 168, or .46 of 1 per cent. of the 36,317 concerns doing business at that time. In 1899 there were 936 manufacturers of cigars and 45 of tobacco. The aggregate production for the calendar year was 85,622,665 cigars, 484,950 cigarettes, 4,185,148 pounds of plug tobacco, 2,360,917 pounds of fine cut, 9,055,213 pounds of smoking, and 3,306,604 pounds of snuff. There were 46 grain and fruit distilleries in operation during the fiscal year ended June 30, 1900, and the amount of fruit brandy produced was 136,661 gallons—the largest amount manufactured in any State except California. The amount of spirits rectified was 464,608 gallons; spirits gauged, 1,972,750 gallons, and fermented liquors produced, 2,150,684 barrels. In 1899, 127,598 tons of pig iron were manufactured, and 170,262 tons in 1900, a gain for the latter year of 42,664 tons.

Commerce.—During the fiscal year 1900 the imports of merchandise at the ports of Bridgton, Newark, and Perth Amboy aggregated in value \$1,057,208; exports, \$2,931,098; imports of gold and silver, \$1,399,095; exports, none; total foreign trade, \$5,387,401, an increase in the year of \$1,455,830. Since the large foreign trade at Jersey City is credited wholly to the port of New York, the above figures do not represent at all accurately the total commerce of the State.

Railways and State Highways.—The new railway construction reported for the calendar year 1900 amounted to 4.90 miles, giving the State a total mileage of 2257.42. \$150,000 are spent annually on the State roads. The aggregate contributions of the State for roads since 1891 are \$865,318, and with this aid 520 miles of road have been constructed in ten years. The new road construction in 1900 was 83 miles, and at the close of the year arrangements had been completed for the construction of 65 additional miles.

Banks.—On October 31, 1900, there were 116 national banks in operation and 14 in liquidation. The capital stock aggregated \$15,138,290; circulation outstanding, \$8,107,217; deposits, \$76,065,103; and reserve held, \$22,079,177. The State banks, June 30, 1900, numbered 20, and had capital, \$1,703,750; deposits, \$8,144,031, and resources, \$11,730,508; loan and trust companies, 30, with capital, \$5,560,800; deposits, \$40,045,780, and resources, \$52,673,028; and mutual savings banks, 26, with depositors (estimated), 202,682; deposits, \$57,886,922; resources, \$63,550,190, and surplus, \$5,380,703. The net assets of 342 building and loan associations aggregated \$47,561,890, of which more than \$9,500,000 represented profits to the shareholders.

Finances.—The total receipts of the State treasury for the fiscal year ending October 31, 1900, were \$3,453,296, of which the State tax on railroad corporations furnished \$908,830, and the tax on miscellaneous corporations, \$1,494,720. The total disbursements for the year were \$2,701,226, and the excess of receipts over expenditures for the year was \$752,070. This amount, added to the balance on hand at the beginning of the fiscal year, gives a balance, November 1, 1900, of \$2,005,222. The indebtedness of the State was \$119,000, and there were \$713,242 in the sinking funds.

Education.—The attendance at the public schools for the school year 1899-1900 was 322,575, and the school expenditures for the year aggregated \$2,333,550. For secondary education in 1899 there were 89 public high schools, with 458 teachers and 10,154 secondary students, and 71 private secondary schools, with 406 teachers and 3486 secondary students. Normal school training was given in 3 public normal schools, which had 35 teachers and 868 students in normal courses. Five universities and colleges for men and for both sexes reported 143 professors and instructors, 1790 preparatory, collegiate, and graduate students, and a total income of \$529,893; 2 schools of technology reported 40 professors and instructors, 536 preparatory and collegiate students, and a total income of \$67,615; and 1 college for women reported 15 professors and instructors, 39 preparatory, collegiate, and graduate

students, and a total income of \$12,000. For professional education there were 5 theological schools, with 37 instructors and 473 students. No law or medical schools were reported.

State Institutions.—The total number of prisoners in 1900 was 1591, and in the course of the year 500 were discharged. \$193,066 were spent for the support of convicts, and \$11,880 for furnishings and repairs. The earnings of the prison inmates aggregated \$91,634. The school for the feeble minded reports 73 instructors, 337 pupils, and property to the value of \$225,000.

National Guard.—The National Guard of New Jersey consists of 43 staff officers, 130 cavalry, 140 artillery, and 3397 infantry. The total number of men authorized is 5127, and the State appropriation is \$174,000.

Population.—The population, according to the United States census, was 1,444,933 in 1890 and 1,883,669 in 1900—an increase for the decade of 438,736, or 30.4 per cent. The five largest cities, with population in 1900, are: Newark, 246,070; Jersey City, 206,433; Paterson, 105,171; Camden, 75,935; and Trenton, 73,307.

Hoboken Fire.—The largest disaster recorded in the history of the port of New York, involving a property loss estimated at between \$5,000,000 and \$7,000,000 occurred on June 30, 1900, when the four docks of the North German Lloyd Steamship Company, situated on the New Jersey side of the Hudson River, were completely destroyed, and three ocean liners were burned out to their steel frames. The fire originated, apparently spontaneously, in one of a large number of cotton bales lying on the southernmost of the piers. Although it appeared that the docks were supplied, and, as had been thought, adequately, with modern fire apparatus, which was immediately brought into use, the fire, aided by a strong wind, spread with extraordinary rapidity over the length of the dock to the west and to the north over the remaining docks and the four steamships lying by them. By the agreement of witnesses hardly more than ten minutes elapsed from the first alarm until the entire acreage comprehended by the ships and wharves was in a blaze. The largest of the vessels, the *Kaiser Wilhelm der Grosse*, was towed out into the river, and the fire, which had not extended below her upper works, was quickly extinguished. Of the other three vessels, the *Main*, of 6398 tons, burned at her pier, and the *Bremen*, of 10,000 tons, and the *Saale*, of 5267 tons, drifted out into the stream with the tide and burned until practically all the inflammable material contained in them was consumed. The loss of life was estimated at about 300. Some of those killed were longshoremen who jumped into the river and were drowned, while others were ship employees working on the lower decks of the vessels and cut off by blazing passages and hatchways. The most pitiful incident of the disaster was that many of these latter could be seen and talked with and even handed water through the portholes of the *Saale*. Yet the portholes were by a few inches too narrow to admit of their escape. It was pointed out, in commenting upon the fire, that in few of the large 600 or 800 feet docks of New York has fireproof construction been followed in building. The docks are commonly built upon piles, with wooden floors, posts, roof-trusses and sheathing. In course of time this wood becomes dry, or soaked in places with oil and tar, and this becomes especially dangerous when, as is usual, the docks contain a large quantity of inflammable merchandise. With reference to ocean liners, moreover, it was noted that the fireproof material so extensively used for buildings is very little employed. Tons of inflammable material are put into passenger ships "which contribute only to forms of barbaric decoration." So that, while the modern vessel is in the first instance a steel structure, the overlaid fittings and equipments are so highly combustible that a fire once started is likely to run through the entire ship. To be sure, the frame will be left. "The truth is," remarks a paper devoted to shipping interests, "that while the subject of fireproof construction on land has attained great perfection, the fitting and equipment of ships have been carried out in almost total disregard of these facts."

Legislature.—Corporation Laws.—Several important acts relative to corporations were passed by the New Jersey Legislature. An act passed in March provided that no corporations organized under the laws of the State should be dissolved until they had paid all taxes due to the State. Another act provided that all corporations doing business in the State should be obliged to file a statement with the secretary of state giving details as to the business and stock of the company. More specifically such corporations were obliged to set forth the amount of their authorized stock and the amount actually issued and outstanding, and also the date appointed for the next annual meeting of the stockholders for the election of directors. The same act prescribed that domestic corporations, with the exception of railway and canal corporations, and those under the supervision of the departments of insurance and banking, should further state whether the name of the corporation had been at all times displayed at its registered office in the State, and whether such corporation had kept at its registered office a transfer book and a stock book containing the names and addresses of the stockholders and the number of shares held by them, and

whether these books had been open at all times to the examination of stockholders, as required by law. By another act the discretionary power given to the governor to grant extension of time to corporations that had not paid their taxes was taken away from him, and he was directed to declare vacant the charters of all corporations which had not paid their taxes for two years past. The previous act allowing the governor discretionary power had apparently not been extensively taken advantage of by him, for in May, 1899, he declared void the charters of 642 corporations for non-payment of taxes, and in May, 1900, he declared void the charters of 672 more.

An act was approved on March 23 providing that all corporations, excepting railroad and canal corporations, enjoying municipal franchises, and having rights on or below streets and highways, should be charged a franchise tax equal to 2 per cent. of the gross receipts received by them from all business transacted in the State. In the case of pipe line companies whose operations extended into other States, the tax was directed to be that proportion of 2 per cent. of their total receipts in which their lines in New Jersey stood to their total length of line.

An important act was approved on March 22 authorizing cities to contract for the purchase of water-works and to pay for the same by the issuance of bonds, for the redemption of which the property of the city might be pledged. These bonds were to pay interest not exceeding 4 per cent., and a sinking fund was to be provided for their redemption. The city was also authorized to purchase the works, if it seemed expedient to do so, not by the issuing of bonds, but by the assumption at par of the principal and interest of any construction bonds issued by the contractor for the works and secured by mortgage upon the water rights and works. In this enactment no debt limit within which the city was obliged to keep was specified. An act was also passed authorizing the creation of a Board of Water Commissioners in each city; this board should have entire charge of the administration of water-works and of the distribution of the water supply in that city, and should collect the water rents and have charge of the books in which the rents and accounts were entered.

An act was approved on March 21 amending an act passed in 1899, whereby it was enacted that no sewers should empty into the waters of the State, provided that this prohibition did not interfere with the use or extension of the existing sewer system. In 1900 this proviso was repealed. The regulation for the flowing of sewage matter into the waters of the State was left to the discretion of the Sewerage Committee, but in regard to the general prohibition of sewers emptying into State waters it was enacted that the waters of the State should not be construed to mean water separating New Jersey from any other State unless such waters were potable.

Revision of School Regulations.—A total revision was made by the Legislature in the regulations governing the public schools of the State. Some of the most important changes made by this revision are summarized as follows by the superintendent of schools in Montclair, N. J.:

1. The referendum is introduced in electing a system for securing members of the Board of Education (Art. VI.). Each municipality that is divided into wards may determine, by popular vote, whether the members of the Board of Education shall be appointed by the chief executive officer or elected at large.

2. Each municipality divided into wards may have its own examining board for the licensing of teachers. This board shall act under rules and regulations prescribed by the State Board of Education. The State thus extends its authority over the city in the matter of licensing teachers (Art. IV., Sec. 34).

3. Specifications for new school buildings must be approved by the State Board of Education (Art. X.). Proper heating, lighting, and ventilation will thus be secured.

4. Any district in the State is now authorized to establish a kindergarten. Whenever a kindergarten is organized children 4 years of age are privileged to attend (Art. XII.).

5. Union graded schools are established in country districts (Art. XI.).

6. Boards of education may provide for the transportation of pupils who reside in remote parts of the district; also of pupils who attend the union grades school (Art. IX., Sec. 118).

Since 1895 the township district law has gone into effect. Each municipality now is one school district, and the schools are under the management of a single Board of Education.

Palisades Park Commission.—In conjunction with an act passed by the Legislature of New York (see NEW YORK, paragraph Legislation), an act was passed providing for the appointment of a permanent commission of 10 members, who were authorized to select, take over, and manage, in the interests of the State, lands along the Palisades of the Hudson, appropriate to form a continuous park from Fort Lee, in New Jersey, to the termination of the Palisades, in New York. The commission was empowered, with certain restrictions as regards roads already established, to acquire lands by purchase or eminent domain, and to make rules for their use and govern-

ment. The commission was also empowered to construct roads and boulevards through the lands acquired and was directed to pay especial attention to the measures taken by the New York Palisades Commission to the end that the interstate park thus jointly established might be laid out upon a uniform plan.

An act was approved on March 20 providing that no veteran of the Civil War holding office in the service of any county should be removed without cause; and that, except in offices with fixed terms, veterans should hold office during good behavior and should be entitled to a hearing if charges were preferred against them.

An act was passed providing for the appointment of a Public Library Commission of 5 members to act as an advisory committee to all librarians of public libraries who asked their advice concerning the acquisition of new books, their cataloguing, or the establishment and administration of libraries. The commission was also authorized to give to each small library of less than 5000 books a sum not exceeding \$100, providing that the library itself appropriated an equal amount.

Elections.—In the State election of 1898, Foster M. Voorhees, the Republican candidate for governor, defeated his Democratic opponent by a plurality of 5499. At the election for congressmen in 1900 New Jersey's 8 representatives in the 56th Congress were returned to the 57th Congress, A. L. McDermott (Dem.) having been elected to fill the vacancy caused by the death of W. D. Daly (Dem.). The Legislature in 1900 consisted, in the Senate, of 14 Republicans and 7 Democrats, and in the House of 43 Republicans and 16 Democrats. As a result of the State elections in 1900 the Legislature in 1901 will consist, in the Senate, of 17 Republicans and 4 Democrats, and in the House, of 45 Republicans and 15 Democrats. In the national election McKinley received 221,707 votes and Bryan, 164,013. In 1896 McKinley received 221,367 votes and Bryan, 133,675. McKinley's plurality therefore decreased from 87,692 to 56,899. Before 1896, however, the State had since 1876 gone Democratic.

State Officers and National Representatives.—State officers for 1900: Executive—governor, Foster M. Voorhees; secretary of state, George Wurts; treasurer, G. B. Swain; comptroller, W. S. Hancock; attorney-general, Samuel H. Gray; adjutant-general, W. S. Stryker; superintendent of education, C. J. Baxter; commissioner of banking and insurance, William Bettle—all Republicans.

Supreme Court: Chief justice, W. J. Magie (Rep.); associate justices, D. A. Depue (Rep.), J. Dixon (Rep.), B. Vansyckel (Dem.), C. G. Garrison (Dem.), J. H. Lippincott (Dem.), W. S. Gummere (Rep.), G. C. Ludlow (Dem.), Gilbert Collins (Rep.); clerk, William Riker, Jr. (Rep.).

Court of Errors and Appeals: Judges, J. W. Bogert, G. Krueger, F. Adams, W. H. Vredenburg, C. E. Hendrickson, J. H. Nixon; chancellor, A. T. McGill and the Supreme Court justices.

State officers for 1901: Executive—same as for 1900.

Judiciary: Supreme Court—chief justice, D. A. Depue (Rep.); associate justices, J. F. Fort (Rep.), J. Dixon (Rep.), B. Vansyckel (Dem.), C. G. Garrison (Dem.), A. Q. Garretson (Dem.), W. S. Gummere (Rep.), G. C. Ludlow (Rep.), G. Collins (Rep.); clerk, William Riker, Jr. (Rep.).

Court of Errors and Appeals: Judges, J. W. Bogert, G. Krueger, F. Adams, W. H. Vredenburg, C. E. Hendrickson, Peter V. Voorhees; chancellor, W. J. Magie and the Supreme Court justices.

Congressional representatives for 1900 (56th Congress): H. C. Loudenslager (Rep.), from Paulsboro; J. J. Gardner (Rep.), from Atlantic City; B. F. Howell (Rep.), from New Brunswick; J. F. Stewart (Rep.), from Paterson; R. Wayne Parker (Rep.), from Newark; C. N. Fowler (Rep.), from Elizabeth; J. S. Salmon (Dem.), from Boonton; W. D. Daly (Dem.), from Jersey City.

Congressional representatives for 1901 (57th Congress): Same as for 1900, except that A. L. McDermott, from Jersey City (Dem.), replaces W. D. Daly.

Senators for 1900 (56th Congress): William J. Sewell (until 1901) and J. Kean (until 1905)—both Republicans.

Senators for 1901 (57th Congress): John Kean (until 1905), from Elizabeth; vacant.

NEW JERUSALEM, CHURCH OF THE, a religious sect, most numerous in England, Canada, and the United States, composed of those who follow the theological views of Emanuel Swedenborg (1688-1772) as published in his various *arcana*. The first regular congregation in the United States was formed in 1792 at Baltimore, Md., but organization was not effected until 1817, when the General Convention was established. The church government, a modified episcopacy for individual churches, is completed by district associations and the annual General Convention, which includes representatives from the associations. Their increase in membership, which has been slow during the past decade, remains small for the last year. The latest reports credit Swedenborgians with 7679 members, 143 ministers, and 173 churches.

NEW MEXICO, a southwestern Territory of the United States, has an area of 122,460 square miles. New Mexico was organized December 13, 1850. The capital is Santa Fé.

Mineralogy.—The estimated production of gold for the calendar year 1900 was 43,538 fine ounces, coinage value, \$900,000, and of silver, 600,000 fine ounces, value, \$366,000. The production of coal for the fiscal year ended June 30, 1900, was 1,187,334 tons—the largest annual tonnage in the history of the Territory—the estimated value of which was \$1,837,165. The total output of coke during the fiscal year ending June 30, 1900, was 42,803 tons, which was shipped to smelting plants in Mexico, New Mexico, Arizona, and Texas. New Mexico has more than 80 mining districts, which are widely distributed throughout the Territory. The mineral resources are extraordinary, and include, in addition to those mentioned above, among the more important the following: Lead, zinc, copper, iron ores, limestone, sandstone, hydraulic cement, turquoise, garnet, opal, natural gas, petroleum, mineral waters, mineral paint, alum rock, basalt, and tin. An immense area of mineral lands is awaiting the capitalist, and it is predicted that New Mexico mines will soon afford the best opportunities for investment in the United States.

Agriculture.—The following shows the production and value of the principal crops for 1900: Corn, 554,752 bushels, \$355,041; wheat, 3,847,347 bushels, \$2,616,196; oats, 229,994 bushels, \$110,397; barley, 31,204 bushels, \$19,346; potatoes, 18,544 bushels, \$21,140; and hay, 77,341 tons, \$765,676. The species of hay grown is the kind known as alfalfa. As a rule, three cuttings a year of this plant are made in the northern part of the Territory, and in the south five cuttings a year are expected. The average yield is one and one-half tons per acre to each cutting. Alfalfa is used by stock raisers as a fattening food, and is fed to hogs with as much success as to cattle. New Mexico has to depend upon artificial irrigation for the enlargement of her agricultural area. There are at present four water systems—one in each of the four corners of the Territory—and much capital might profitably be invested in extending these systems. In addition to the grain crops mentioned above, New Mexico produces many varieties of fruits, and most of the ordinary garden vegetables. The canaigre plant, one of the richest producers of tannic acid known, is found wild in the greatest abundance in almost every part of the Territory. In 1900 New Mexico contained more sheep than any other Territory or State. The estimated wool product for the year was: Number of sheep, 3,786,688; wool, washed and unwashed, 16,093,424 pounds; wool, scoured, 7,402,975 pounds.

Manufactures.—In 1899 there were 13 cigar and 3 tobacco factories, and the combined output for the calendar year was 520,000 cigars and 11,900 pounds of smoking tobacco.

Railways.—During the calendar year 1900 the new construction of railroads amounted to 7.43 miles, giving the Territory a total mileage of 1758.07.

Banks.—On October 31, 1900, the total number of national banks organized was 18, only 9 of which were in operation. The capital stock aggregated \$736,800; circulation outstanding, \$493,191; deposits, \$3,701,408; and reserve held, \$1,134,841. The territorial banks, June 30, 1900, numbered 6, with capital, \$344,650; deposits, \$1,688,996; and resources, \$2,125,408. No private or savings bank was reported.

Finances.—The total assessed value of real and personal property for the year ending June 30, 1900, was \$38,452,181. The total bonded indebtedness, September 3, 1900, was \$1,205,100, a decrease of \$38,300 in a year. The county indebtedness in 1900 aggregated \$2,973,023. The treasurer reports that for the first time in the history of the Territory its business is on a cash basis. The balance in the treasury, June 2, 1900, was \$150,969, but it was expected that by the close of the fifty-first fiscal year, on December 1, 1900, this would be reduced to \$102,731.

Education.—In 1899 the district schools numbered 513, and the teachers, 575. There were 21,761 pupils enrolled, and the average daily attendance was 16,553. The receipts for the year for school purposes aggregated \$251,107, and the expenditures, \$135,749. Six public high schools had 176 students and 13 teachers, and 4 private secondary schools had 83 students and 12 teachers. The following shows the number of pupils and of teachers and the value of property for each of the higher educational institutions: University of New Mexico, 170 pupils, 16 teachers, property valuation, \$89,000; College of Agriculture and Mechanic Arts, 177 pupils, 22 teachers, property valuation, \$89,000; School of Mines, 68 pupils, 3 teachers, property, \$55,000; Normal School of Silver City, 85 pupils, 5 teachers, property, \$20,000; Military Institute, 105 pupils, 5 teachers, property, \$30,000; New Mexico Normal University, 197 pupils, 7 teachers, property, \$55,000. In addition there were 59 sectarian schools, supported by the Catholic, Methodist, and Presbyterian churches, and the New West Educational Commission.

State Institutions and Charities.—In 1899 the school for the deaf, dumb, and blind had 13 pupils and one teacher, and property to the value of \$5000. The average number of patients in the Territorial insane asylum for the year ending May 31, 1900,

was 92, as compared with 77 for the preceding year. On September 1, 1899, 183 convicts were confined in the territorial penitentiary. During the ensuing year 127 additional prisoners were received, making a total of 310; of this number 93 were discharged and 3 escaped, leaving, on September 1, 1900, 214 prisoners.

Population.—According to the United States census, the population in 1890 was 153,593, and in 1900, 195,310, an increase for the decade of 41,717, or 27.2 per cent.

Statehood.—In his annual report for the year ending June 30, 1900, the governor renewed the recommendation in his previous report, that New Mexico be admitted as a State. The governor stated that while the population of New Mexico as estimated by the federal census of 1900 was less than 200,000, the territorial officials were assured that this number was an underestimate, and that the Territory contained, exclusive of Indians, at least 225,000 inhabitants.

Elections.—In the territorial election of 1900, Rodey, the Republican candidate for delegate to Congress, received 21,567 votes and Larrazolo, the Democratic candidate, 17,857 votes. Rodey's plurality was thus 3710. This was a larger plurality than in 1898, when Perea, the Republican nominee, received a plurality of 2063. The territorial Legislature for 1901 will have 8 Democrats and 28 Republicans in the two branches. In 1900 the territorial Legislature had 6 Democrats and 30 Republicans in the two branches.

Territorial Government and National Delegates.—Territorial government for 1900: Executive—governor, Miguel A. Otero (Rep.); secretary, George H. Wallace (Rep.); treasurer, J. H. Vaughn (Rep.); auditor, L. M. Ortiz (Rep.); adjutant-general, W. H. Whiteman (Rep.); attorney-general, E. L. Bartlett (Rep.); superintendent of education, M. C. de Baca (Rep.).

Supreme Court: Chief justice, W. J. Mills; associate justices, J. R. McFie, J. W. Crumpacker, F. W. Parker, and C. C. Leland; clerk, J. D. Sena—all Republicans.

Territorial government for 1901: Executive—same as for 1900.

Judiciary: Same as for 1900.

Territorial delegate for 1900 (56th Congress): Pedro Perea (Dem.), from Bernalillo.

Territorial delegate for 1901 (57th Congress): B. S. Rodey (Rep.), from Albuquerque.

NEW SOUTH WALES, a state of the Australian commonwealth under the constitution taking effect January 1, 1901, borders the Pacific Ocean, touching Queensland on the north, Victoria on the south, and South Australia on the west. The capital is the port Sydney, with a population, including the suburbs, of about 427,000.

Area, Population, and Education.—The state consists of 141 counties, the total estimated area of which is 310,700 square miles—an area equal to that of all the States of the Union, except Virginia, that touch the Atlantic. The estimated population on June 30, 1899, was 1,357,050—725,900 males and 631,150 females; on June 30, 1900, 1,361,120—729,420 males and 631,700 females. Only about three-fourths of one per cent. of the inhabitants are aborigines and about three and one-half per cent. are foreigners. There is no state religion. The Anglican Church has the greatest number of adherents; others of the leading denominations, named in the order of their importance, are the Roman Catholic, Wesleyan and other Methodist churches, Presbyterian, and Congregational. Education, which is controlled by the state, is to a certain extent gratuitous and for children between 6 and 14 years compulsory. The total number of state schools in 1898 was 2817, of which 1775 were primary schools; there were 4759 teachers and a student enrolment of 227,561, and the net state expenditure was £656,829 (\$3,196,130). In addition there are industrial and reformatory schools, schools for deaf mutes and the blind, and the Sydney Grammar School. In 1898 there were upward of 58,000 pupils in 956 private schools, of which about one-third were Roman Catholic. The University of Sydney has about 50 teachers and 465 students.

Government and Finance.—Responsible government under a constitution was established in New South Wales, which was the oldest of the Australian colonies, in 1855. This constitution with its amendments was little affected by the new constitution of the federated commonwealth. The executive authority is vested in a governor (the Right Hon. William Lygon, Earl Beauchamp, since January, 1899), who is appointed by the British government and is assisted by a ministry of ten members responsible to the legislature. The constitution places the legislative power in a legislature of two houses, the legislative council and the legislative assembly, members of the former, not less than 21 in number and at present 58, being appointed by the crown for life, and members of the latter, 125 in number, being elected triennially on a basis of manhood suffrage. The premier and treasurer since September, 1899, has been Sir William John Lyne. There are inferior and circuit courts and a supreme court, consisting of a chief justice and six puisne judges.

Revenue accrues chiefly from import duties, excise, direct taxation, and railways;

the leading expenditures are for public works and interest on the public debt. Revenue and expenditure for fiscal years have been as follows:

	1897.	1898.	1899.	1900.
Revenue.....	£9,107,208	£9,304,253	£9,754,185	£9,572,912
Expenditure.....	9,440,350	9,219,940	9,734,417	9,403,144

For the fiscal year 1901 the estimated revenue is £10,360,899, and the ordinary expenditure (excluding war and plague expenses) £10,331,170. In 1900 the public debt amounted to £61,572,831, of which about 80 per cent. has been expended on the construction of railways, tramways, telegraphs, water-works, and sewerage.

Industries and Commerce.—The principal industries are agriculture and mining. In March, 1900, the cultivated land in the country amounted to 2,438,761 acres, of which 1,839,626 acres were under wheat; in the previous year these amounts were respectively 2,206,500 and 1,631,954 acres. Besides wheat the products include corn, barley, oats, hay, potatoes, tobacco, sugar-cane, and grapes and other fruits. At the beginning of 1899 there were about 41,241,000 sheep in the country, 2,029,500 cattle, 491,500 horses, and 247,000 swine. The wool produced in the fiscal year 1899 amounted to 271,864,306 pounds, valued at £8,361,721. During the year there was a considerable decrease in the number of live stock. The mineral wealth of New South Wales includes gold, silver, copper, tin, lead, zinc, iron, antimony, cinnabar, coal, and asbestos. There also occur in small quantities diamonds, rubies, opals, and other precious stones. The total value of minerals raised up to the beginning of 1899 was placed at £119,853,429, of which coal accounted for £34,321,205. The value of the mineral output for 1899 was £6,157,000, the increase over 1898 being £1,290,000. The production of the principal minerals in 1898 and 1899 was as follows:

	Gold. Ounces.	Lead, Zinc, and Silver.	Copper.	Tin.	Coal.
1898.....	340,493	£1,762,278	£220,887	£60,600	£1,271,832
1899.....	496,196	2,229,653	339,814	98,428	1,325,798

The principal exports in 1898 were as follows: Wool, 280,948,406 pounds, value, £9,457,535; gold coin, £6,529,060; coal, £962,668; hides and skins, £840,533; preserved and frozen meat, £721,457; tallow, £495,918; leather, £340,400. The total imports and exports have been reported as follows:

	1896.	1897.	1898.	1899.
Imports.....	£20,561,510	£21,744,350	£24,453,560	£25,594,315
Exports.....	23,010,349	23,751,072	27,648,117	28,445,466

In 1899 the British Empire was represented by 83 per cent. of the imports and 70.2 per cent. of the exports. In 1895, 3 per cent., and in 1899, 8 per cent. of the exports went to the United States. At the beginning of 1900 the merchant marine of New South Wales comprised about 1040 vessels aggregating 136,000 tons. The total number of British and foreign vessels entered in 1898 was 3316, of 3,464,867 tons; and cleared, 3263 vessels of 3,455,061 tons.

Communications.—New South Wales has expended about £38,000,000 upon its railways. On June 30, 1900, there were 2811 miles of railway open for traffic, of which 104 miles had been completed during the year then ended, while about 300 miles were under construction. Excepting 84 miles of private railway, all the railways and street railways—of which the city of Sydney has over 70 miles—are owned by the government and operated under the control of a board of three commissioners. For the years ending June 30, 1899 and 1900, the total net profits of the railways (including tramways) were £1,515,365 and £1,462,649 respectively. At the beginning of 1899 there were 13,242 miles of telegraph line in operation, with 916 stations, the cost of constructing the system being over £989,000.

NEW YORK, a Middle Atlantic State of the United States, and one of the original thirteen, has an area of 49,170 square miles. The capital is Albany.

Mineralogy.—The production of petroleum in 1899 was 1,320,909 barrels, valued at \$1,708,926. New York was the only State, except Pennsylvania, which mined all four varieties of iron ore in 1899; the output was: Magnetite, 344,159 tons; red hematite, 45,503 tons; brown hematite, 31,975 tons, and carbonate, 22,153 tons; total, 443,790 long tons, valued at \$1,241,985. The increase for the year, 263,839 tons, was nearly one and a half times the total production for 1898. Quarrying yielded five kinds of stone in 1899, the year's output of each being valued as follows: Limestone, \$1,545,699; sandstone, \$1,218,053; marble, \$338,816; granite, \$306,711, and slate, \$76,675.

Agriculture.—The following shows the production and value of each of the principal crops for 1900: Hay, 3,351,991 tons, \$47,095,474; potatoes, 27,481,356 bushels, \$12,366,610; corn, 17,236,032 bushels, \$8,100,935; wheat, 6,496,166 bushels, \$5,002,048; oats, 44,538,974 bushels, \$14,252,472; barley, 3,751,924 bushels, \$1,913,481; rye, 3,189,165 bushels, \$1,785,932, and buckwheat, 3,280,158 bushels, \$1,869,690. New York led all the States in the production of buckwheat and potatoes, and ranked second in the production of rye. The wool clip of 1900 was estimated as follows: Number of sheep, 819,088; wool, washed and unwashed, 4,914,528 pounds; scoured wool, 2,457,264 pounds.

Industries.—The following table, compiled from the report of the Bureau of Labor Statistics, shows the number of establishments, number of employed, and annual wages paid in the leading industries, as reported by 3553 employers for the year 1899:

Industries.	Number of Establishments.	Number of Employees.	Wages Paid in 1899.
Lime, brick, glass, etc.....	197	15,203	\$6,042,037
Metals, machinery, and apparatus....	989	102,154	51,127,291
Lumber, cooperage, furniture, etc....	389	23,457	10,366,216
Leather, rubber, pearl, etc.....	222	20,284	7,976,594
Chemicals, oils, explosives, etc.....	123	10,869	5,262,207
Paper, cardboard, and pulp.....	70	4,413	1,893,812
Printing, etc.....	417	28,831	16,500,395
Textiles	238	48,201	16,357,202
Clothing, millinery, etc.....	319	47,295	18,038,312
Food, tobacco, and liquors.....	347	34,698	15,733,111
Gas, electricity, street railways, etc...	52	14,993	9,709,111
Building	190	5,880	3,370,111
Total.....	3,553	356,278	\$162,645,649

In 1899 there were 6490 manufacturers of cigars, and 423 of tobacco, and their combined output for the calendar year was 1,292,927,577 cigars, 1,929,480,253 cigarettes, and 18,201,916 pounds of tobacco, of which 3,169,766 pounds was plug cut, 2,285,917 pounds was fine-cut, 12,643,125 pounds was smoking, and 103,108 pounds was snuff. Grain and fruit distilleries in operation numbered 35. The production of fruit brandy for the fiscal year ended June 30, 1900, was 88,824 gallons; amount of spirits rectified, 13,204,177 gallons; distilled spirits gauged, 30,590,770 gallons, and fermented liquors produced, 9,923,108 barrels. New York held first place among the States in the production of cigars, cigarettes, and fermented liquors. During the calendar year 1899 the production of pig iron was 264,346 long tons, and in 1900, 292,827 long tons. In 1899 New York and New Jersey together produced 61,461 long tons of open-hearth steel. The entire quantity of aluminum produced in the United States in 1900 (7,150,000 pounds) was manufactured at Niagara Falls, N. Y. The number of hogs packed and marketed at Buffalo during the year ended March 1, 1900, was 361,000. New textile mills built during 1900 included 5 cotton mills, with 46,240 spindles; 8 silk mills, and 2 finishing mills.

Commerce.—The foreign trade at the port of New York during the fiscal year ended June 30, 1900, was: Gold and silver, imports, \$24,765,253; gold and silver, exports, \$87,948,559; merchandise, imports, \$537,237,282, and merchandise, exports, \$518,834,471. This was 63 per cent. of the imports to the United States, and 37 per cent. of the exports. Fifteen years ago 46 per cent. of the exports were shipped from New York. Imports of merchandise at eleven other ports of the State aggregated in value \$26,887,781; exports, \$39,561,053; imports of gold and silver, \$9,376,620; exports, \$6,041,940. The total foreign trade of the State was \$1,250,612,959, an increase in a year of \$134,386,962. During the fiscal year, 4233 vessels engaged in the foreign trade entered at the port of New York, the gross tonnage of which aggregated 8,176,761 tons; and 4018 vessels cleared, with a total tonnage of 7,841,111 tons.

Transportation and State Highways.—The new steam railway construction reported for the calendar year 1900 was 36.90 miles, giving the State a total mileage of 8230.11. The total number of passengers carried on the steam roads in 1900 was 73,846,114, and on the street surface and elevated roads, 1,986,138,207; 671 persons were killed and 1374 injured by the steam roads in 1900, while the accidents on the street and elevated railways aggregated 152 killed and 665 injured. The average number of employees on all the street railroads of the State, including the elevated roads of Brooklyn, was 28,075, who received as wages and salaries an aggregate of \$16,968,907. The tonnage on the State canals for 1900 was 3,350,000 tons, a falling off from the figures for 1899 of 336,000 tons, due in part to the fact that lake traffic did not open until April 23.



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FOUR NEW YORK POLITICIANS.—1. Benjamin B. Odell, Jr. 2. Thomas C. Platt.
3. Bird S. Coler. 4. Richard Croker.

Under the new Higbie-Armstrong act \$150,000 was appropriated in 1900 by the Legislature for building roads. Twenty-three roads, covering a mileage of 53.58, had been begun at the close of the year. These roads are to cost \$377,584, one-half of the expense to be borne by the localities benefited by the roads.

Banks.—On October 31, 1900, there were 337 national banks in operation and 159 in liquidation. The capital stock aggregated \$97,336,930; circulation outstanding, \$56,777,725; deposits, \$924,626,128, and reserve held, \$260,050,063. The State banks May 31, 1900, numbered 200, and had capital, \$28,870,700; deposits, \$251,059,315, and resources, \$365,838,895. The loan and trust companies June 30, 1900, numbered 59, with capital, \$48,250,000; deposits, \$640,837,146, and resources, \$796,483,887; private banks, 15, with capital, \$495,000; deposits, \$2,365,619, and resources, \$3,184,516; and mutual savings banks, 128, with depositors, 2,036,016; deposits, \$922,081,596, and resources, \$1,037,869,160. The increase in the number of banks during the year was: State banks, 7; trust companies, 2, and savings banks, 1. The trust companies reported a gain in resources from January to July, 1900, of \$124,293,165, and the savings banks an increase of \$37,460,061 during the same period. Of the total deposits in savings banks of the United States in 1900, nearly 42 per cent. was in New York banks. The exchanges at the clearing house in New York City for the year ended September 30, 1900, were \$51,964,588,572, or \$5,403,642,199 less than the clearings of the preceding year. The exchanges at New York, Buffalo, Rochester, Syracuse, Albany, and Binghamton aggregated \$52,516,601,231, a net decrease of \$5,358,940,950 in a year. In 1900 there were 299 building and loan associations in the State, with a total membership of 89,409 and assets aggregating \$37,253,725.

Finances.—On September 30, 1900, the State debt, incurred mainly for canal improvements, amounted to \$10,130,660. The receipts and balances for the fiscal year were \$36,511,698, of which \$4,504,815 was the balance from October, 1899; expenditures, \$29,221,896; balance in treasury September 30, 1900, \$7,289,802. Some of the chief sources of State revenue were: Tax on corporations, \$2,624,508; organization tax on corporations, \$356,779, and inheritance tax, \$4,334,803. Under the new law placing the duty of assessing the special franchise tax upon the State Board of Tax Commissioners, 4751 valuations were made, aggregating \$266,163,059, an increase of \$170,101,157 over the assessment of the same property by the local assessors in the previous year. The total receipts from excise taxes for 1900 amounted to \$12,567,199, of which \$4,232,625 was received by the State treasury, the balance going to the local authorities.

Insurance.—In 1900 there were 253 insurance companies doing business in the State, with assets of \$1,943,004,411, capital stock of \$105,122,017, and other liabilities of \$1,515,309,737. The risks in force amounted to \$32,925,249,575, and the surplus was \$353,326,119. There were 55 fraternal beneficiary societies, with receipts for the year of \$33,047,648, and disbursements of about \$31,000,000; and 53 non-fraternal associations, with receipts of \$11,382,831; payments for claims of \$7,956,803, and payments for expenses, \$3,398,026.

Education.—The annual report of the State Department of Public Instruction shows that the increase for the year 1899-1900 in the total expenditures for school purposes was \$5,368,500; in the value of school sites, \$6,614,880; in the number of school children, 19,574; in the number of teachers, 856, and in the number of volumes in school libraries, 16,688. During the year four school districts were dissolved, and their territory united with other districts. The school districts in 1900 numbered 11,740; school-houses, 11,931; children of school age, 1,569,653; the average daily attendance was 857,488; value of school-houses and sites, \$81,768,495; length of school term, 175 days. The number of private schools was 944 (57 less than in 1899), and the aggregate attendance was 163,946. The average annual salary of the 34,848 teachers employed was \$604.78. The expenditures for teachers' salaries amounted to \$19,218,802; for buildings, sites, repairs, etc., \$8,854,633; for school libraries, \$142,158. During the year ended September 30, 1900, the State paid \$529,118 for the support of secondary schools and the several departments of the State University, and \$414,353 for the maintenance, etc., of the normal schools. The State bears about 6 per cent. of the cost of secondary education. The total cost of secondary education in 1900 was \$6,096,371, of which \$4,077,420 was for high schools, and \$2,018,953 for academies. The secondary schools reported 79,365 students, and property valued at \$28,412,184. For higher education \$7,663,037 was expended in 1900; 29,795 students were reported as attending New York colleges and professional, technical, and other special schools; and such institutions reported in 1900 property valued at \$77,902,339. The number of libraries of all kinds in 1900 was 1035. Between 1893 and 1900 the number of independently organized libraries under State supervision has grown from 29 to 175, and of books, from 69,956 to 606,332. The total number of volumes in the school libraries in 1900 was 1,560,858.

During 1900 an event of some importance was the passage of the Davis law, which unified the education boards of Greater New York, and provided for a uniform

salary schedule for teachers in all boroughs, with a mandatory annual increase of pay, and for the raising of a general fund for the salaries of supervisors and teachers and a special fund for other school expenses. The Board of Estimate is to receive budgets from the Board of Education, but is not allowed to diminish the general fund below the amount of 4 mills on each dollar of property value. The salary of teachers is fixed within certain limits by the Board of Education, the Board of Examiners being required to estimate the value of previous experience of teachers gained both in and out of the Greater New York. The bill was made retroactive from January 1, 1900, though signed by Governor Roosevelt on May 3. An effort was made to provide for the unification of the educational interests of the State, but was unsuccessful, partly through the impossibility of reaching an agreement as to the appointment of the State chancellor.

Penal and Charitable Institutions.—The average number of prisoners confined in the various prisons during 1900 was 3376, about one-half of whom were engaged in productive labor. The expenditure for the support of prisoners during the fiscal year was \$460,528. On October 1, 1900, there were 22,088 inmates of the various State insane hospitals, an increase of 653 over the number of inmates one year previous. The expenditures for the State hospitals for the fiscal year was \$3,599,632, or \$165.38 per capita. The total expenditures for construction and extensive repairs during the year were \$662,949. The State commission also reports \$20,000,000 invested in buildings and equipment, an average cost of \$909 per patient. The school for the feeble-minded reports 115 instructors and assistants, 1352 pupils, and property valued at \$587,053.

National Guard.—The National Guard of the State of New York is the most important body of State militia in the United States. It consists of 69 staff officers, 343 cavalry, 370 artillery and 13,448 infantry. The total authorized strength is 18,000 men, and the State appropriation is \$574,000.

Population.—According to the United States census, the population in 1890 was 5,997,853; in 1900, 7,268,012; increase for the decade, 1,270,159, or 21.2 per cent. This is the largest numerical increase recorded for any decade, and the highest percentage of increase since 1860. The largest cities, with population in 1900, are: New York (the largest city in the United States), 3,437,202; Buffalo, 352,387; Rochester, 162,608; Syracuse, 108,374; Albany, 94,151; Troy, 60,651, and Utica, 56,383.

The Croton Dam Strike.—In the early part of April a strike broke out among the Italian workmen engaged in constructing the new dam at the Croton reservoir, which is being built to increase the water supply of New York City. The strike was singular, inasmuch as foreign workmen were striking for the enforcement of an American law. The strikers were receiving \$1.25 for a day of 10 hours, whereas the law of New York State provides for the payment of \$1.50 for a day of 8 hours on public works of this kind. The contractors, however, claimed that the law could not be applied in their case, since it was passed after they had taken the contract. Deputy sheriffs were sent to the work, and soon the militia was ordered to the scene of the trouble by Governor Roosevelt, as it was claimed that the strikers would not allow other men to take their places, and that they might possibly cut off the water supply of New York City. Some of the strikers were said to be armed, which seemed to be confirmed by the killing of one of the soldiers in the night. The attempts of the State Board of Mediation and Arbitration and of the Italian consul-general to bring about a settlement were frustrated by the refusal of the contractors to make any concessions. Soon the State authorities made several arrests of strikers on charges of inciting to riot, drilling under arms, etc.; and the men, realizing that their struggle was hopeless, returned to work before the end of the month.

Municipal Ownership of Docks.—A communication was made public in March from Mr. Bird S. Coler, the comptroller of New York City, to the Chamber of Commerce, advocating the ownership by the city of that part of the water-front of Manhattan Island which was in the hands of private owners. The assessed value of this private dock property is \$18,631,130, and it could be bought, in the opinion of the comptroller, for about \$36,000,000. The reasons why these docks, constituting in value about one-third of the entire water-front, should be purchased are given by the comptroller, as follows: (1) Cheaper rentals and better facilities can be given under municipal ownership. Much of the property now held privately and situated in localities of great commercial importance is so poorly maintained or little developed as to offer facilities altogether inadequate to shipping interests. The proprietors, moreover, are naturally unwilling to spend money for extensive improvements, because they realize that their property may be at any time taken over by the city. (2) Aside from the advantages accruing to New York commerce and to private commercial interests, the municipal ownership of the docks would furnish New York with a very profitable business investment. The constitutional clause, however, which limits New York City's indebtedness to 10 per cent. of the assessed value of

her taxable property places difficulties in the way of a bond issue for this purpose, and the section should be so amended as to exempt from the debt limitation bonds issued for revenue-producing enterprises. (See MUNICIPAL GOVERNMENT.) But if this did not seem practicable, a slight change in existing laws would enable the city to acquire the dock property in such a way as not to increase materially the city's debt. With the same view of extending and increasing the dock facilities of New York City, the charter revision committee recommended on December 1 "that the limit now fixed upon the annual issue of bonds by the Board of Estimate and Apportionment without the concurrence of the Board of Aldermen for dock purposes be raised from \$3,000,000 to \$5,000,000 a year."

Rapid Transit.—The contract for the underground electric railway in New York City was signed on February 24, 1900. The conditions upon which it was signed proved that New York City had at last learned the value of municipal franchises. The main points of the contract were as follows: (1) Mr. John B. MacDonald, backed by the Rapid Transit Subway Construction Company, of which Messrs. August Belmont & Company were the organizers and fiscal agents, agreed to build the tunnel and electric railway for the city of New York for the sum of \$35,000,000; and for the proper performance of this work security was given in \$7,000,000. (2) The plans for the road were to be those drawn up by the Rapid Transit Commission of the city of New York and their engineers, and the contractor was to be subject to municipal inspection. (3) Payment to the contractor as the work progressed was to be made by bonds issued by the city; but interest on such bonds was to be paid by the contractor, who agreed to pay in addition a 1-per-cent. sinking fund to provide for the ultimate redemption of the bonds. (4) The ownership of the road was to be vested in the city and was to be leased by the city to the contractor for fifty years. It will be seen from the conditions of this contract that the taxpayers of New York City will not pay one cent for the building of the road, and that at the expiration of fifty years the entire system with all its accrued value reverts absolutely to the city. This is so widely different from the perpetual franchises of the Manhattan Railway and other of New York's railway systems as to amount to a revolution in favor of the city. Much credit is given by unanimous consent to Alexander E. Orr, president of the Rapid Transit Commission, and to Bird S. Coler, comptroller of New York, for their energy and ability in overcoming the legal and political difficulties which stood in the way of executing the contract. The contract was finally made practicable (1) by action of the New York Legislature on January 25, providing that the New York City Municipal Assembly should have no power over the issue of bonds for rapid transit purposes, but that the bonds might be authorized at one time by the Board of Estimate and Apportionment and issued by the comptroller as needed; and (2) by action of the Appellate Division of the Supreme Court on February 16, approving the securities offered by Messrs. MacDonald and Belmont. See the article RAPID TRANSIT.

Ice Trust.—Late in April much popular indignation was aroused by the action of the American Ice Company in endeavoring to put up the price of ice in New York City to 60 cents per 100 pounds, an increase of 100 per cent. over the rate charged for several years past. The American Ice Company is a corporation which was organized in 1899, took over the Knickerbocker Ice Company of Maine and the Consolidated Ice Company of New York, and issued for those properties and for other purposes securities to a par value of \$36,954.100. The company defended its action in putting up the price of ice on the ground that there had been a shortage the previous year in the ice crop of the Hudson River. It was known, however, that the company owned an abundant storage supply of ice in Maine, and that in any event artificial ice could be made and sold at a profit for 25 cents per 100 pounds. In the investigation which followed it transpired that His Honor Robert A. Van Wyck, the mayor of New York, Mr. Richard Croker, and other men prominently connected with the government of New York were large stockholders of the company. Action was immediately brought both against the American Ice Company and against Mayor Van Wyck. The action in the former case was based on the ground that the company was endeavoring to corner a necessary article of consumption in violation of the anti-trust law of the State, and its charter should therefore be vacated. In the latter case action was based on the fact that the American Ice Company had dealings with three of the large city departments, and that the mayor was therefore interested in city contracts, in violation of the law. As evidence that the mayor had become interested in the company with a full knowledge of its monopolistic tendencies, it was alleged that exclusive docking privileges had been granted to it with his acquiescence, and it was shown that the mayor had been allowed to acquire \$500,000 par value in the company's securities in return for \$50,000 cash and his notes for the remainder. The charges filed with Governor Roosevelt asking for the mayor's removal were dismissed by the governor on November 23 on the ground that no proof had been offered of any wilful violation

of law on the part of the mayor, such as could justify the drastic measure of removing him from office. And in this connection the governor appended the opinion of the attorney-general of New York to the effect that it appeared that the mayor had acquired stock in the American Ice Company prior to the objectionable transactions of that company, and that if those transactions had been without his knowledge, then the mayor could not be held guilty of offence. The proceedings to vacate the charter of the ice company, while not decided, seemed, at the end of the year, likely to fall into innocuous desuetude. In a preliminary skirmish, based on technicalities, as to whether or no an order issued by Judge Chase in May appointing a referee to secure evidence by the examination or witnesses, was valid, the appellate division of the Supreme Court on November 20 declared that order null and void. As popular interest in the subject had in the meanwhile subsided, and as the American Ice Company had long since reduced the price of its ice, both as a concession to public opinion and because several independent ice companies had started in business, it seemed probable that the case of the ice company would not be given further preference on the court calendar.

Ramapo Water Company.—In August 1900, the taxpayers of New York City were unwontedly aroused and frightened by a contract proposed and recommended on August 16 by the Commissioner of Water Supply to the Board of Public Improvements, binding the city to take 200,000,000 gallons of water daily for 40 years from the Ramapo Water Company at a cost of \$70 per million gallons, entailing upon the city thereby a cash and property loss amounting in round figures to \$200,000,000. By a tie vote of the board successive motions to lay the matter over for four and three weeks were lost, and it was then agreed to postpone action on the contract—for the ratification of which a majority of the board were in favor—for fourteen days pending a report from the comptroller. At the end of that time the comptroller presented an adverse report, and temporary injunctions obtained by taxpayers, and the force of popular indignation, precluded the possibility of any favorable action by the board in the immediate future. It was generally felt, however, that a very great danger had been narrowly averted, and might at any time recur, and an investigation of the matter was made by the comptroller, the press, and in great detail by the Merchants' Association of New York. The resulting disclosures were of a startling nature. The Ramapo Company, it appeared, had been organized in New York in 1887, under a legislative act authorizing private companies to supply cities with water and to acquire land and water rights for that purpose, by condemnation or otherwise. In 1890 the Legislature gave to such companies sweeping power to acquire rights by purchase or condemnation, to intercept and divert water from the owners or riparian owners, and to lay conduits across the lands of others. In 1895 the Legislature passed a special act entitled "An Act to Limit and Define the Powers of the Ramapo Water Company." By this limitation the Ramapo Company acquired greater power in its special line than was or is possessed by any other such water company, or by any town or city in the State. It gained the right to furnish water upon contract anywhere within the State, to any municipality, or public or private corporation, and for either municipal or commercial purposes, and no proviso was made "for filing an amended certificate or obtaining the consent of local authorities." The ability of the Ramapo Company to acquire under this act land and water rights was practically unlimited. For the following proceeding was prescribed for any owner who objected to the route laid out by the Ramapo Company of the taking of his property by condemnation proceedings: (1) *Within fifteen days* after hearing of the matter from the company, the objector should send to the company a notice of petition to the court, together with "a survey, map and profile of the route designated by the company and of the proposed alteration thereof." (2) The justice, upon the hearing of the application, should appoint a commission of three, who should choose one of the two routes: with this proviso, that the route originally chosen by the company should not be materially lengthened nor substantially changed. (3) The commissioners should receive from the plaintiffs \$6 per man per day and their reasonable expenses; this sum to be refunded by the defendants, if defendants lost. While the power of the Ramapo Company was thus augmented, the power of New York City to obtain water was diminished till it was less than that of any other city in the State. By a legislative act of 1896, Brooklyn, which was badly in need of an additional supply, was prohibited from using the abundance of water in Suffolk County; and this prohibition continued in force under the Greater New York charter. In the Greater New York charter, moreover, was inserted a new and dextrous clause, whereby the city was enjoined from acquiring water-rights which were in whole or in part used for supplying water to other towns or cities or the people thereof. While this act prevented the city of New York from acquiring the rights to the unused surplus of available watersheds, no matter in how great ratio the surplus stood to the total supply, it did not prevent the city of New York

from buying to any quantity the waters, the rights of which were owned by private companies. And hence the private companies could take from the towns the water which they actually did need, and sell it to New York City along with the surplus, while New York City could not acquire from the companies by condemnation the water which towns did not need. Under the stimulating effect of its ability to work mischief the Ramapo Company acquired extensive water-rights in nearly every county of the Hudson Valley and also in part of the Mohawk and Delaware valleys. The proposed contract with the city of New York was then sprung on the public. After its temporary defeat, and at the session of the Legislature in 1900, three bills were introduced to render abortive any further plans of the Ramapo Company with reference to New York City. (1) The Demarest bill, which was a bill to repeal the act of 1895, giving the Ramapo Company its exclusive privileges, was opposed on the score of its constitutionality, and was defeated in the Assembly. (2) The Morgan bill, prepared by the Merchants' Association of New York City, which provided that in certain specified counties the city of New York might have power to condemn water-rights owned by private companies, provided that the same were not in *actual* use, or which, in the opinion of the court, would not be reasonably needed by other cities or towns. Strong opposition of a covert nature developed against this bill, and having remained in committee many weeks, it was withdrawn, as it was thought to endanger the success of the Fallows bill. (3) The Fallows bill provided that before any contract entered into by the commissioner of water supply with a private water company became valid, it should receive the approval of the Boards of Public Improvements and of Estimates and Apportionments, and also the separate written consent of the mayor and the comptroller. The Fallows bill passed over the mayor's veto and became a law. The powers of the Ramapo Company remained unrepealed, and hence the danger remained that New York City, through inability to obtain water elsewhere, might some day be forced into contracting at a large loss with a private water company.

Water Supply of New York City.—The proposed Ramapo contract caused wide discussion of the present and future water supply of New York City. The Merchants' Association of New York, made, through their engineers, an elaborate investigation of this, and their report confirmed the commissioner of water supplies' statement that Greater New York urgently needed a largely increased supply. The engineering committee of the association stated that New York and Brooklyn had on several occasions narrowly escaped a water famine. In 1891, in the boroughs of Manhattan and the Bronx, the storage reservoirs were exhausted, and there was only a little water left in the Central Park reservoirs. For 255 days, preceding February 5, 1900, the rainfall on the watersheds supplying New York had been below the normal; the Croton reservoirs had been steadily lowered, and Manhattan and the Bronx were within a few days of a water famine. At about the same time Brooklyn had a still narrower escape, being within one day of the exhaustion of her supply. A water famine, it was pointed out, would not necessarily or probably deprive the city of water for washing, cooking or drinking, but it would stop business, shut down the factories, and leave New York at the mercy of a conflagration. The committee found that the average daily consumption of water for 1899 in all the boroughs of New York City was 371,778,000 gallons or "an average daily consumption per capita of 103 gallons, which approximates to the lowest rate of consumption in any large American city." Of this amount the city furnished 93.7 per cent., and private companies the balance. For the boroughs of Manhattan and the Bronx, the greatest permanent yield on completion of the Cornell dam was estimated at 290,000,000 gallons per day. For the year 1900 the consumption was estimated at 245,000,000, and the yearly increase in consumption was estimated at 15,000,000. For the year 1903, therefore, the consumption will be equal to the supply, and after that only an increased carefulness and a partial saving of the present large waste will tide the city over until additional supplies can be made available: the very longest time which the city can wait for this was considered to be ten years. The daily yield in Brooklyn was found to be about 108,000,000 gallons, and for some years the consumption has very nearly equalled this. The engineering committee recommended the immediate building of a 48-inch pipe to Milburn, and the erection of additional pumps there. The amount of water wasted in Greater New York, either in houses or underground, was variously estimated at from 120,000,000 to 150,000,000 gallons a day. The committee believed that all methods for saving more than about one-tenth of this would be "costly and slow of development," and that "no great saving could be hoped for inside of twenty years." In the matter of an increased supply the committee found five sources from which large quantities of sufficiently pure water could be economically drawn: (1) The Ten-Mile and Housatonic rivers would furnish, by gravity, 750,000,000 gallons of water daily. But as this supply lies largely in Connecticut, a riparian owner in that State could enjoin the proposed diversion of the waters of those rivers, in

either the New York or the Federal courts. And if the Legislature of Connecticut authorized the city of New York or a private corporation to condemn the rights of riparian owners in the State of Connecticut, the constitutionality of the law would be doubtful. (2) The Walkill river, in Orange County, would yield by gravity over 400,000,000 gallons daily. But as about one-fifth of the area of this watershed lies in New Jersey, the same legal objections hold which apply to the Ten-Mile and Housatonic rivers. (3) The Esopus, Catskill and Schoharie creeks in the Catskill Mountains would furnish over 400,000,000 gallons daily. The cost of conducting the water to New York, the pollution of the streams in summer, the water-power that would be destroyed, and the necessity of removing in whole or in part several small villages in constructing reservoirs, militate against this scheme. (4) The Adirondack region could be depended upon to supply as much pure water as New York needed, the principal question being one of economy. The engineering committee considered taking the water required at Schroon Lake, and also at Hadley, 29 miles below. From Schroon Lake, an aqueduct line 203 miles long would have to be constructed to New York. From Hadley, the cost of the shorter aqueduct line would be counterbalanced by the necessity of filtering the water. (5) The waters of the Hudson taken at Poughkeepsie would furnish a supply which could easily be increased up to 1,500,000,000 gallons daily. By means of equalizing reservoirs placed in the Adirondacks, the depth of the Hudson below Troy would be somewhat increased during the dry season; and in the upper Hudson, below Hadley, the reservoirs would increase the horse-power now available at low water by 150,000, representing a yearly revenue of \$1,500,000. The water taken at Poughkeepsie could be pumped up to filter beds on the east side of the river, and from there carried by aqueducts to the city line. It was estimated by the engineering committee that by such a system the cost price of delivering daily 250,000,000 gallons of water at the city line, 131.5 feet above sea level, including interest, maintenance, and operation of the plant, would be \$28.33 per million gallons. The proposed system would be capable of indefinite enlargement, as need required, and at a lower proportionate cost than the initial undertaking.

Legislation.—The New York Legislature convened on January 3 with a Republican majority in both Houses, and adjourned on April 6, this being the shortest session but one since 1835. Among the important measures passed was a bill repealing the Horton Boxing law and absolutely prohibiting prize-fighting in New York State. A bill was passed creating a Tenement House Commission, which should report upon the industrial, social, and moral condition of the tenement-house classes and upon the construction and sanitation of the tenements. The investments permitted to savings banks were increased so that their holdings could include "a first mortgage of the whole or a part mortgage which is the first mortgage on either the whole or some part" of the railroad property possessed and operated by the railroad company. By a bill providing for the giving of bonds by the contractor of the New York Rapid Transit Railroad, the Legislature authorized the immediate prosecution of the underground road. Fifty thousand dollars was appropriated for the establishment of a State hospital for consumptives in the Adirondacks, funds for its maintenance to be made through the State Board of Charities, and its direction to be vested in five trustees, to be appointed by the governor. The Legislature also provided for the appointment of ten commissioners, to be known as the "commissioners of the Palisades Interstate Park," who should select lands on or near the Palisades for the establishment of a State park and the prevention of further mutilation to the cliffs, subject to the enactment of a similar statute by the Legislature of New Jersey. The general subject of taxation was discussed, and it was proposed to tax mortgages and the stock of national and State banks and of trust companies. Nothing, however, was done, except to declare a tax rate of 1.96 for the ensuing year, this being the lowest rate, with but one exception, since 1856. By the passage of the Davis bill, a new salary schedule was made for the teachers of New York City, increasing the compensation in almost every grade. A Charter Revision Commission was created, which should report to the governor not later than December 1, 1900. Important matters discussed and provided with legislation, temporary or inadequate, were the project of the Ramapo Water Company and the advisability of making extensive improvements in the State canal system.

Canals.—On January 25 Governor Roosevelt sent a special message to the Legislature, urging that action in the matter of the State canal system be taken in accordance with the recommendations of the Canal Commission appointed by him in 1899, whose report be transmitted. This commission, of which General Francis V. Greene was chairman, recommended that upward of \$60,000,000 be spent in enlarging the State canals, building branches, and improving the locks. They pointed out that water routes are inherently cheaper than rail routes, and that the discrimination of the railways against New York City, combined with the cheaper wharfage at other seaboard cities and the competition of the new Canadian canal system, which pro-

vides unbroken transit from Lake Superior to the mouth of the St. Lawrence, rendered it imperative for New York to protect her trade interests. The increasing shipping on the Great Lakes and the growing importance of Buffalo as an iron and steel centre were cited as additional justification for incurring heavy expense in making canal improvements. The commission proposed a canal of sufficient size for boats 150 feet in length, 25 feet wide, and 10 feet draft, and with a carrying capacity of 1000 tons. Such boats were after the most efficient European models, and could be made for less than \$5000 each. Mechanical means of traction, steam or electricity, were advised for the barges, and also mechanical power to operate the gates and valves and to move the boats in the locks. It was estimated that when the enlargements were completed and under an efficient management the cost of carrying cargo would be reduced from the present figure of 2 mills per ton mile to .67 mill per ton mile. Railroad freight transportation under the most scientific management is 6 mills per ton mile. Hence, "as compared with the lowest rail rate ever quoted across the State of New York, the saving on a tonnage of 20,000,000 per annum"—a conservative estimate of the canal's capacity—"would be nearly \$18,000,000 per annum." The Canal Commission report was shelved by the Legislature, as was also the report, handed in at the same time, of the New York Commerce Commission, appointed by Governor Black. The latter commission pointed out that the port of New York, "instead of sharing in the vast aggregate increase of the nation's foreign trade during the past nineteen years, had actually fallen behind to the extent of more than \$300,000,000." The commission recommended the completion of the canal improvements authorized in 1895, and estimated as costing all told \$15,000,000. On the day of its adjournment a bill passed the Legislature appropriating \$200,000 for a complete engineering survey of the canal system and for exact estimates on the proposed enlargements and improvements.

New York Charter.—The continuous criticisms upon the efficiency of the charter of the city of New York resulted in the appointment of a charter revision committee of fifteen, authorized by the Legislature to employ counsel, subpoena and swear in witnesses, and to compel the production before it of any public record or document of the city. Governor Roosevelt appointed the following men members of the commission: George L. Rives, Charles C. Beaman, Franklin Bartlett, Henry W. Taft, John D. Crimmins, Frank J. Goodnow, Edgar J. Levey, and Alexander T. Mason of the borough of Manhattan; Charles A. Schieren, James McKean, Isaac M. Kapper, and William C. DeWitt, of the borough of Brooklyn; James L. Wells, of the borough of Bronx; George W. Davison, of the borough of Queens, and George Cromwell, of the borough of Richmond. On December 1 this committee submitted its report to the governor. Among the important recommendations made were the following: To abolish the council and to vest the general legislative power of the city—outside of the control of the finances—in the present Board of Aldermen, whose membership, however, should be increased to 120; to extend the mayor's power of removing heads of departments from office, which power the mayor can at present exercise only during the first six months he is in office, to his entire term; to increase the power of the Board of Estimate and Apportionment over the finances of the city, and to have this board consist solely of elective officers, with votes as follows: Mayor, 3; comptroller, 3; president of the Board of Aldermen, 3; president of the borough of Manhattan, 2; president of the borough of Brooklyn, 2; president of the borough of the Bronx, 1; president of the borough of Queens, 1; president of the borough of Richmond, 1; to abolish the Departments of Sewers, of Highways, of Buildings, of Public Buildings, Lighting and Supplies, and to transfer their functions to the presidents of boroughs and the heads of departments; to abolish the Board of Public Improvements; to abolish the Police Board, and to substitute therefor a single commissioner; and to vest the management of the finances of the Departments of Police and Education in the Department of Finance; to abolish the borough Boards of Education, and to increase the powers of the central Board of Education, and to institute local Boards of Education; "to take away absolutely from every head of department the power to fix the salaries of his own subordinates," and to make it the duty of the city Legislature "to fix the salary of every person who draws pay from the city of New York;" to repeal the Davis School bill, to repeal the legislation of 1895 enacted for the benefit of the Ramapo Water Company, to annul the constitutional provisions as to the city's debt limit in so far as it applies to increasing the city's water supply, and to adopt the system in practice in Massachusetts as to the release on parole and probation of minor offenders, the establishment of a municipal printing plant, and the supply of water to municipalities by the State.

Elections.—In the State election of 1900 B. B. Odell, the Republican nominee for governor, received 804,859 votes, and John B. Stanchfield, the Democratic nominee, received 693,733 votes. Mr. Odell's plurality was thus 111,126. The elections resulted in thirteen changes in New York's congressional representation: In the first district, Frederick Storm (Rep.) was elected to succeed Townsend Scudder (Dem.); in the

third district, Henry Bristow (Rep.) was elected to succeed Edmund H. Driggs (Dem.); in the fourth district, Henry A. Hanbury (Rep.) succeeded Bertram T. Clayton (Dem.); in the sixth district, George H. Lindsay (Dem.) succeeded Mitchell May (Dem.); in the eighth district, Thomas J. Creamer (Dem.) succeeded D. J. Riordan (Dem.); in the ninth district, Henry M. Goldfogle (Dem.) succeeded Thomas J. Bradley (Dem.); in the thirteenth district, O. H. P. Belmont (Dem.) succeeded Jefferson M. Levy (Dem.); in the fourteenth district, W. H. Douglas (Rep.) succeeded William Astor Chanler (Dem.); in the sixteenth district, C. A. Pugsley (Dem.) succeeded John G. Underhill (Dem.); in the nineteenth district, William H. Draper (Rep.) succeeded A. V. S. Cochrane (Rep.); in the twentieth district, George N. Southwick (Rep.) succeeded Martin H. Flynn (Dem.); in the twenty-fourth district, Albert B. Shaw (Rep.) succeeded Charles A. Chickering (Rep.); in the thirty-first district, James B. Perkins (Rep.) succeeded James M. E. O'Grady (Rep.).

The State Legislature in 1900 consisted of 27 Republicans in the Senate and 23 Democrats; and 92 Republicans in the House and 58 Democrats. In 1901 the Legislature will consist, in the Senate, of 35 Republicans and 15 Democrats, and in the House of 105 Republicans and 45 Democrats.

In the national election McKinley received 821,992 votes, and Bryan, 678,386. In 1896 McKinley received 819,838, and Bryan, 551,369 votes. McKinley's plurality was thus reduced from 268,469 in 1896 to 143,606 in 1900.

State Officers and National Representatives.—State officers for 1900: Executive—governor, Theodore Roosevelt; lieutenant-governor, T. L. Woodruff; secretary of state, John T. McDonough; comptroller, W. J. Morgan; state treasurer, J. P. Jaeckel; attorney-general, J. C. Davies; state engineer and surveyor, E. A. Bond; superintendent of public instruction, C. R. Skinner; superintendent of banking department, F. D. Kilburn; superintendent of insurance, L. F. Payn (succeeded January 29 by F. Hendricks); superintendent of state prisons, C. V. Collins; superintendent of public works, J. N. Partridge; deputy secretary of state, J. B. H. Mongin; deputy superintendent of insurance (1) R. H. Hunter, (2) H. D. Appleton; tax commissioners, J. E. Leaycraft, G. E. Priest, and L. F. Stearns.

Court of Appeals: Chief justice, A. B. Parker (Dem.); associate justices, A. Haight (Rep.), J. C. Gray (Dem.), I. G. Vann (Rep.), E. T. Bartlett (Rep.), D. O'Brien (Dem.), and C. E. Martin (Rep.).

State officers for 1901: Executive—governor, B. B. Odell, Jr.; lieutenant-governor, T. L. Woodruff; other officers the same as for 1900, except that F. Hendricks replaces Payn as commissioner of insurance and E. C. Knight succeeds Morgan as comptroller.

Court of Appeals: Same as for 1900, with addition of E. M. Cullen, J. S. Landon, and W. E. Werner.

Congressional representatives for 1900 (56th Congress): Democrats (18), Townsend Scudder, John J. Fitzgerald, E. H. Driggs, B. T. Clayton, F. E. Wilson, Mitchell May, Nicholas Muller, D. J. Riordan, T. J. Bradley, A. J. Cummings, William Sulzer, G. B. McClellan, J. M. Levy, W. A. Chanler, J. Ruppert, Jr., J. Q. Underhill, W. H. Ryan, M. H. Glynn; Republicans (16), A. S. Tompkins, J. H. Ketcham, A. V. S. Cochrane, J. K. Stewart, L. N. Littauer, L. W. Emerson, C. A. Chickering, J. S. Sherman, G. W. Ray, M. E. Driscoll, S. E. Payne, C. W. Gillet, J. W. Wadsworth, J. M. E. O'Grady, D. S. Alexander, E. B. Vreeland.

Congressional representatives for 1901 (57th Congress): Democrats (13), J. J. Fitzgerald (Brooklyn), F. E. Wilson (Brooklyn), G. H. Lindsay (Brooklyn), Nicholas Muller, T. J. Creamer, H. M. Goldfogle, A. J. Cummings, William Sulzer, G. B. McClellan, O. H. P. Belmont, Jacob Ruppert, Jr. (all from New York), C. A. Pugsley (Peekskill), and William H. Ryan (Buffalo); Republicans (21), Frederick Storm (Bayside, L. I.), Henry Bristow (Brooklyn), H. A. Hanbury (Brooklyn), W. H. Douglas (New York), A. S. Tompkins (Nyack), J. H. Ketcham (Dover Plains), W. H. Draper (Lansingburg), G. H. Southwick (Albany), J. K. Stewart (Amsterdam), L. N. Littauer (Gloversville), L. W. Emerson (Warrensburg), A. D. Shaw (Watertown), J. S. Sherman (Utica), G. W. Ray (Norwich), M. E. Driscoll (Syracuse), S. E. Payne (Auburn), C. W. Gillet (Addison), J. W. Wadsworth (Geneseo), J. B. Perkins (Rochester), De A. S. Alexander (Buffalo), and E. B. Vreeland (Salamanca).

Senators for 1900 (56th Congress): T. C. Platt (until 1903), from Owego, and C. M. Depew (until 1905), from New York.

Senators for 1901 (57th Congress): Same as for 1900.

NEW YORK ACADEMY OF SCIENCES, incorporated 1818 as the Lyceum of Natural History in the City of New York, holds weekly meetings from October to May, and publishes *Annals* (current volume XIII.) and *Memoirs*. In 1900 it had 323 resident members and fellows and 42 honorary members, besides corresponding members. President, Robert S. Woodward; recording secretary, Richard E. Dodge, Teachers' College, New York City. See ZOOLOGICAL SOCIETIES.

NEW YORK CHAMBER OF COMMERCE, organized in 1768 "to promote and extend just and lawful commerce," had at the close of 1900 a membership of 1300. Secretary, George Wilson, 32 Nassau Street, New York City.

NEW YORK PUBLIC LIBRARY, ASTOR, LENOX, AND TILDEN FOUNDATIONS, consolidated in 1895, has at present two buildings, the Astor, 40 Lafayette Place, and the Lenox, which contains also an art collection, at 895 Fifth Avenue, both buildings being open free from 9 A.M. to 6 P.M. The number of visitors in the last fiscal year to the Astor was 88,554, and to the Lenox, 28,162, the aggregate increase over the preceding year being nearly 5700. Among the accessions for the year were 17,557 prints, presented by Mr. S. P. Avery in May, 1900; the Theodoros Bailey Myers collection of American books and manuscripts, presented by Mrs. Myers, Mrs. James, and Mrs. Mason; a large collection of manuscripts (collected by G. L. Ford and his sons), presented by Mr. J. P. Morgan; manuscript collections of James Monroe, presented by Mr. J. L. Cadwalader; of James A. Hamilton and of James A. Bayard, presented by Mr. P. W. Schuyler. Long files of San Francisco and Richmond, Va., newspapers were purchased, as well as extensive series of Italian, Belgian, and Spanish official documents. An important series of transcripts from the British Record Office, manuscripts relating to the American loyalists in the Revolution, is now nearly completed. Plans and specifications for the construction of the boiler vaults of the new library building and for the construction of the building itself have been completed by the architects. The foundation work is practically finished. In December steps were taken toward the consolidation of the New York Free Circulating Library with the New York Public Library. The total number of volumes available for readers is 536,381, and 177,646 pamphlets. Director, John S. Billings.

NEW YORK UNIVERSITY, in New York City, founded in 1831, comprehends eight schools, one of which, the School of Commerce, was opened in 1900. Early in March was made the announcement of a gift of \$100,000 to the university for a Hall of Fame in honor of great Americans. The building, a semicircular colonnade, connecting the Hall of Philosophy with the Hall of Languages, and containing one hundred and fifty panels, which are to be dedicated with simple inscriptions to the chosen men, was begun immediately, and is rapidly nearing completion. By the conditions, fifty names were to be selected in 1900, and five more in each succeeding five years until the year 2000, when the complement of one hundred and fifty will be reached. The rules further state that only persons born on what is now United States territory who have been dead ten years shall be eligible to election. Of the names submitted, from public suggestion, to a representative committee of one hundred, but twenty-nine received the required vote, so provision has been made for a ballot of the committee in 1902 to fill the twenty-one vacancies. The list of accepted names, with the official vote, is as follows: George Washington, 97; Abraham Lincoln, 96; Daniel Webster, 96; Benjamin Franklin, 94; Ulysses S. Grant, 92; John Marshall, 91; Thomas Jefferson, 90; Ralph Waldo Emerson, 87; Henry Wadsworth Longfellow, 85; Robert Fulton, 85; Washington Irving, 83; Jonathan Edwards, 81; Samuel F. B. Morse, 80; David Glasgow Farragut, 79; Henry Clay, 74; Nathaniel Hawthorne, 73; George Peabody, 72; Robert E. Lee, 69; Peter Cooper, 69; Eli Whitney, 67; John James Audubon, 67; Horace Mann, 67; Henry Ward Beecher, 66; James Kent, 65; Joseph Story, 64; John Adams, 61; William Ellery Channing, 58; Gilbert Stuart, 52; Asa Gray, 51. In view of the prominence of some foreign-born Americans, an additional hall, provided with thirty panels, has been projected. New York University in the last college year had a faculty of 186 and a student enrolment of 1735, a large increase over last year. Its library contains 55,000 volumes, including Germanic and Semitic collections, which rank among the best in the United States. The institution has an endowment of \$3,627,199. Its income for the last academic year amounted to \$569,818, its receipts from benefactions, \$348,312.

NEW ZEALAND, a group of islands in the South Pacific, lying some 1200 miles east by south of New South Wales, constitutes a British colony.

Area, Population, Education.—The total estimated area is 104,471 square miles, of which North Island embraces 44,468 square miles and South, or Middle, Island, 58,525 square miles. The area of Stewart Island is 665 square miles, and of the Chatham islands, an adjacent group, 375 square miles. The total estimated population in 1899 was 787,784, of whom 39,854 were natives (Maoris). Exclusive of the Maoris, about 98 per cent. of the inhabitants are British. The capital is Wellington, on North Island; the population of this city, with suburbs, on December 31, 1899, was 47,862. The populations of the other chief towns on the same date was as follows: Auckland, with suburbs, 66,501; Christchurch, with suburbs, 55,441; Dunedin, with suburbs, 49,791; Invercargill, with suburbs, 10,296; Napier, 9486; Nelson, 7120.

New Zealand has no state church and grants no aid to any religious body. In

1896 about two-fifths of the inhabitants belonged to the Anglican Church, slightly more than one-fifth were Presbyterians, about one-seventh Roman Catholics, and one-tenth Methodists. Primary education is free, secular, and compulsory. In December, 1899, there were 1645 public primary schools, with 3615 teachers and 131,315 pupils, and 307 private schools, with 15,295 pupils. There were also 82 schools for Maoris. For higher education there are 25 endowed colleges or secondary schools. Degrees are conferred by the University of New Zealand, which is merely an examining body. There are four affiliated colleges—at Dunedin, Christchurch, Wellington, and Auckland. For the year 1898-99 the state expenditure for education was £518,900, including over £22,000 for native schools. In 1899 there were 50 daily papers, 36 published three times a week, 29 twice a week, 61 weeklies, 3 fortnightlies, and 29 monthlies.

Government and Finance.—The colony is administered by a governor (the Right Hon. the Earl of Ranfurly since August, 1897), who is assisted by a responsible ministry. The legislative power is vested in a legislative council and a house of representatives; members of the former are 45 in number and are appointed by the governor (prior to 1891, for life; since that date, for seven years); members of the latter body, elected by adult suffrage for terms of three years, number 74, of whom 4 are Maoris. Women are allowed to vote, but are not qualified for election to the house of representatives or for appointment to the legislative council. New Zealand has a volunteer military force of about 9800 men. Revenue accrues chiefly from customs, railways, land tax and sales of land, stamps, and an income tax. The principal items of expenditure are interest on the public debt, railways, posts and telegraphs, education, and the constabulary. The revenue and expenditure for the fiscal year 1899 were reported at £5,258,228 and £4,858,511 respectively; for 1900, revenue, £5,699,618; expenditure, £5,140,127. In March, 1899, the net public debt amounted to £46,080,727, and one year later, £46,930,077. Among the items of expenditure for the fiscal year 1900-01 are £95,000 representing the expenses of the New Zealand contingent in the Boer War, £14,000 for harbor defences, £200,000 for old-age pensions, and £462,000 for education. Large amounts are to be expended on railways, roads, bridges, telegraphs, and public buildings, while the universal penny postage system, which goes into operation on January 1, 1901, will cause an annual loss of £80,000 in revenue, which is further curtailed by tariff reductions.

Industries, Commerce, etc.—The principal industry is agriculture. In 1899 the total cultivated area, including 10,244,739 acres under sown grasses, was 11,984,606 acres, or less than one-fifth of the total area of the islands. There are about 20,000,000 acres of forest and 9,000,000 acres of barren mountain tops and other worthless lands and lakes. In 1898 the production of the most important cereals was: Oats, 16,511,000 bushels; wheat, 13,073,000 bushels; barley, 1,678,000 bushels. In 1899 the number of live stock in New Zealand was about 19,673,000 sheep, 1,203,000 cattle, 258,000 horses, and 193,000 swine. The principal minerals found are gold, silver, coal, manganese, antimony, and copper. The gold, silver, and coal produced in 1898 amounted in value to £1,080,691, £33,107, and £453,033 respectively. The value of the gold output in 1899 was reported at £1,513,242. The leading exports are as follows, the values being for 1898: Wool, £4,645,800; frozen meat, £1,698,750; gold, £1,080,691; kauri gum, £586,770; butter and cheese, £539,460; hides, skins, and leather, £427,250. The principal imports (values for 1898) are: Textiles and clothing, £1,935,000; iron and steel goods, £1,502,794; sugar, £425,270; paper, books, etc., £342,330; alcoholic liquors, £273,378. The total imports and exports have been as follows for fiscal years:

	1895-96.	1896-97.	1897-98.	1898-99.	1899-1900.
Imports.....	£6,400,129	£7,137,320	£8,055,223	£8,230,600	£8,739,633
Exports.....	8,550,224	9,321,105	10,116,998	10,517,655	11,938,335

By far the greatest part of New Zealand commerce is with Great Britain; next in importance are Australia and the United States. During 1899, 609 vessels, with a tonnage of 811,183, entered the ports, and 604 vessels, aggregating 807,866 tons, cleared.

In March, 1900, there were 2104 miles of state railways open for traffic and 111 miles under construction; there were also 167 miles of private railway, of which 97 miles were taken over by the government before the close of the year. In 1899 there were 6736 miles of state telegraph line and 18,746 miles of wire.

History.—At the general election, December 6, 1899, the Liberal party, under the leadership of the premier, the Right Hon. Richard J. Seddon, was victorious for the fourth consecutive time. In the summer of 1900 a committee of both houses of the legislature reported in favor of raising the strength of the colony's volunteer forces to 18,000. In October, 1899, New Zealand sent a body of mounted rifles to serve with

the British troops in South Africa. Subsequently, in January, February, and March, 1900, other contingents were sent, aggregating about 1360 mounted men.

On September 29, 1900, the British Parliament almost unanimously resolved upon the annexation to New Zealand of the islands of Rarotonga, Mangaia, Aitutaki, Mitiero, and Atiu, in the Hervey or Cook group; Rakakonga and Manahiki, in the Penrhyn group, and Savage, Palmerston, and Pukapuka. On October 8 Lord Ranfurly, governor of New Zealand, landed at Rarotonga and formally annexed the Cook Islands. Subsequently he proceeded on a similar mission to Mangaia, Aitutaki (already British), Palmerston, and the Penrhyn islands. On October 20 the New Zealand house of representatives voted that the imperial government be requested to sanction the incorporation of Fiji as an integral part of the colony. Already the premier of New South Wales had issued a protest to the Colonial Office, on the ground that the annexation of the Fiji Islands would give New Zealand undue trade advantages over the Australian colonies. Similar protest was made relative to the annexation of the Cook Islands. The premier was assured by the Colonial Office that the imperial government would not at that time consider a proposal for the federation of Fiji with New Zealand.

NICARAGUA, the largest republic of Central America, lies south of Honduras and north of Costa Rica. The capital is Managua.

Area and Population.—The republic comprises 13 departments, including the Mosquito Reserve, of which the aggregate estimated area is 49,200 square miles. The estimated areas of Guatemala and Honduras are 48,300 and 43,000 square miles respectively. The estimated population of Nicaragua in 1895, including about 40,000 uncivilized Indians, was 420,000. The pure white inhabitants are very few in number, the population consisting almost entirely of mestizos, Indians, negroes, and mulattoes. Chinese immigration is prohibited. There are said to be nearly thirty towns of 2000 or more inhabitants. Reported populations of some of these are: Leon, 40,000; Managua, 20,000; Granada and Masaya, each 15,000; Rivas, 8000; Bluefields, 2100; San Juan del Norte, or Greytown, about 1500.

Government and Education.—The constitution of 1894 vests the chief executive authority in a president, who is elected for a term of four years, and is assisted by a cabinet of responsible ministers, who preside over four administrative departments. The president in 1900 was Señor José Santos Zelaya, who was re-elected for the term ending in 1902. The legislative power devolves upon a congress of one house, composed of 40 representatives, elected by popular vote for terms of two years. The military forces are reported to comprise a regular army of 2000 men, a reserve of 10,000, and a national militia of 5000. Education is in a very backward condition. Even in the most advanced towns, Leon and Granada, there are enrolled in the schools hardly one-third of the children, and with most of these instruction is a failure. Roman Catholicism is the prevailing religion. In 1900 the reported number of periodicals and newspapers published was 9, of which Managua had 4.

Finance.—The financial situation in 1899 did not seem to be encouraging, but in his message to the congress in 1900 President Zelaya reported a better, even a "satisfactory" condition. Revenue accrues largely from customs duties, excise, and the national railways and steamboats; the largest expenditures are for the departments of public works, war, and finance. The latest available report of revenue and expenditure places the one at \$1,909,000 and the other at \$2,181,000, United States currency. The foreign public debt with arrears was reported to amount to £286,030 (\$1,391,822); in the preceding year the internal debt stood at about 7,500,000 pesos. Nicaragua has silver as its monetary standard, and on October 31, 1899, the value of the peso in United States money was 43.6 cents; one year later it was 45.1 cents.

Industries and Commerce.—The leading industries are cattle raising and agriculture; in regard to the latter, however, it should be noted that only a small proportion of the tillable land is under cultivation. The principal crop is coffee, with sugar and bananas ranking next; tobacco is also cultivated, the rubber industry is increasing, and to some extent there is exploitation of the valuable woods native to the country, such as mahogany and rosewood. In 1900 the leaves of the coffee trees were extensively attacked by a disease known as *stilbum flavidum*, commonly called *ojo del gallo*, which prevents fruit bearing. The metals found in Nicaragua include gold, silver, copper, iron, tin, lead, and antimony. Mineral development, however, is not advanced, and many of the mines that were famous in the Spanish period are now unworked, though they are still said to be capable of valuable production. Gold mining is carried on with some success in the departments of Nueva Segovia and Chontales. Between the lakes and the Pacific large deposits of iron occur, and some of the ore assays as high as 48 per cent. of pure metal. The principal export is coffee; other exports of some importance are gold, silver, rubber, hides, and cattle. The leading import is cotton textiles; other imports are woollen goods, alcoholic liquors, flour, iron and steel wares, drugs, and wire fencing. The chief countries exporting to Nicaragua, and also

receiving Nicaraguan products, are, in the order of their importance: Great Britain, the United States, Germany, and France. For 1898 the total estimated value of the imports to the country was \$2,789,365 (United States money); exports, \$3,098,231. About two-thirds of the foreign trade passes through the Pacific port, Corinto, where there entered in 1898, 78 sea-going vessels, of 114,161 tons. Other ports of considerable account are Bluefields and San Juan del Norte, both on the Caribbean coast. Trade with the United States has been as follows for calendar years:

	1897.	1898.	1899.	1900.
Imports from the United States.....	\$1,058,592	\$1,100,767	\$1,486,352	\$1,767,399
Exports to the United States.....	1,323,967	1,179,993	1,594,719	1,729,747

The Nicaraguan government and people desire that the proposed canal (see following article) across their country should be constructed; they anticipate from it great industrial and commercial advantages. In his message to the congress the president said of the canal: "It is enough to say that we shall never place any obstacles in its way, but, on the contrary, we shall employ all our influence and all our activity toward the realization of such a grand ideal."

Communications.—Nicaragua has few good roads. A railway, 58 miles in length, is in operation from Corinto to Momotombo, and another, 33 miles long, connects Managua, on the lake of that name, with Granada, on the northwestern shore of Lake Nicaragua. From Masaya, on the latter railway, the government has constructed a short line to Jinotepe, thus giving to important coffee districts communication, by rail and by water (over Lake Managua), with the port of Corinto. The proposed construction by the government of a railway from San Ublado, on Lake Nicaragua, to Rama, near Bluefields, has been abandoned for the present in favor of a line between Managua and La Paz, connecting the two divisions of the existing railway. All railway is owned by the government, and additional construction has been projected. There are about 120 post-offices, 60 telegraph offices, and 1250 miles of telegraph.

The Bluefields Customs Trouble.—When the insurgents had possession of the port of Bluefields during the Reyes rebellion of February, 1899, they exacted the payment of the customs duties, and upon the return of the government collectors after the suppression of the outbreak another forced payment of the same duties was made. Accordingly, an appeal was made by the American merchants in Bluefields who had suffered the injustice, and a temporary arrangement regarding the claims was effected in May, 1899. In March, 1900, a decision of the Nicaraguan judiciary was announced, according to which the excess payments should be returned to the claimants.

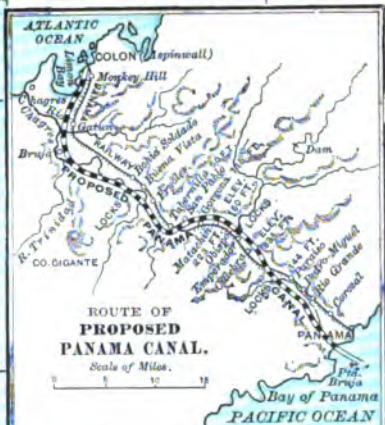
Other Events of 1900.—On July 24 General E. P. Alexander, who, upon the request of the Nicaraguan and Costa Rican governments for American arbitration had been appointed arbitrator by President Cleveland, rendered his decision, which was said to be satisfactory to both countries. (See COSTA RICA.) An arbitration commission also defined the boundary between Nicaragua and Honduras. The government continues to encourage immigration through the medium of colonization companies. A government museum of commerce has been established at Managua. Important improvements have been begun in the harbor of Bluefields. Late in the year a concession was granted for the establishment of a steamship line between San Juan del Norte and Limon (Costa Rica) and Colon (Colombia). Such a line would afford to Nicaragua weekly mail service by way of New Orleans. See CENTRAL AMERICA.

NICARAGUA CANAL. *Hay-Pauncefote Canal Treaty.*—In his annual message to Congress in 1898, the President suggested that definite action by Congress was urgently required in order that the linking of the Atlantic and Pacific oceans by a practical waterway might become a realized fact. The President also stated that the construction of this waterway was indispensable to the intimate and ready intercommunication between the eastern and western seaboard of the United States, demanded by the annexation of the Hawaiian Islands and the prospective expansion of American influence and commerce in the Pacific, and that the national policy called more imperatively than ever for the control of the projected canal by the government of the United States. The British government considering that this recommendation advocating American control of the canal was not in consonance with the terms of the Clayton-Bulwer Treaty of 1850, by which the neutrality of the canal was guaranteed, asked for information upon the subject from the State Department. The President stated in reply that there was no intention of disregarding the Clayton-Bulwer Treaty, but that the United States was desirous of obtaining the consent of Great Britain to such a modification of the treaty as would, without affecting the "general principle" of neutrality invoked, enable the United States to construct the canal for the benefit of the commerce of the world.



CENTRAL AMERICA

Railways represented thus —
 0 10 20 30 40 50 75 100 150
 Geographical Miles 60-One Degree
 0 10 20 30 40 50 75 100 150
 English Miles 60-One Degree



Negotiations with Great Britain were thereupon begun. But in January, 1899, after a preliminary draft of the convention had been made, Lord Salisbury, in view of the fact that the Joint High Commission seemed unable to settle any of the questions at issue between Canada and the United States, stated that he could hardly make a "concession which would be wholly to the benefit of the United States at a time when they appeared to be so little inclined to come to a satisfactory settlement in regard to the Alaskan frontier." When, however, as stated by Lord Lansdowne, a bill had been introduced in Congress whose enactment would cause embarrassment to the United States, because it was "in direct violation of the Clayton-Bulwer Treaty," and when, also, Great Britain had been led to expect that the Hay-Pauncefote Treaty would be ratified by the Senate, "Her Majesty's government determined to accept the convention unconditionally as a signal proof of their friendly disposition and of their desire not to impede the execution of a project declared to be of national importance to the people of the United States."

On February 5, therefore, President McKinley transmitted to the Senate, for ratification, a treaty between Great Britain and the United States, whose purpose was to "facilitate the construction of a ship-canal to connect the Atlantic and Pacific oceans" and to remove any objections arising out of the Clayton-Bulwer Treaty of 1850, to "the construction of such canal under the auspices of the government of the United States."

Provisions of the Treaty.—The acting articles of the treaty were as follows:

Article I. It is agreed that the canal can be constructed under the auspices of the government of the United States, either directly at its own cost, or by gift or loan of money to individuals or corporations, or through subscription to or purchase of stock or shares, and that, subject to the provisions of the present convention, the said government shall have and enjoy all the rights incident to such construction, as well as the exclusive right of providing for the regulation and management of the canal.

Article II. The high contracting parties desiring to preserve and maintain the "general principle" of neutralization established in Article VIII. of the Clayton-Bulwer convention, adopt as the basis of such neutralization the following rules, substantially as embodied in the convention between Great Britain and certain other Powers, signed at Constantinople October 29, 1888, for the free navigation of the Suez Maritime Canal; this is to say:

First. The canal shall be free and open, in time of war as in time of peace, to the vessels of commerce and of war of all nations, on terms of entire equality, so that there shall be no discrimination against any nation or its citizens or subjects in respect of the conditions or charges of traffic or otherwise.

Second. The canal shall never be blockaded, nor shall any right of war be exercised, nor any act of hostility be committed within it.

Third. Vessels of war of a belligerent shall not revictual nor take any stores in the canal, except so far as may be strictly necessary; and the transit of such vessels through the canal shall be effected with the least possible delay, in accordance with the regulation in force, and with only such intermission as may result from the necessities of the service. Prizes shall be in all respects subject to the same rules as vessels of war of the belligerents.

Fourth. No belligerent shall embark or disembark troops, munitions of war, or warlike materials in the canal except in case of accidental hindrance of the transit, and in such case the transit shall be resumed with all possible despatch.

Fifth. The provisions of this article shall apply to waters adjacent to the canal, within three marine miles of either end. Vessels of war of a belligerent shall not remain in such waters longer than twenty-four hours at any one time except in case of distress, and in such case shall depart as soon as possible; but a vessel of war of one belligerent shall not depart within twenty-four hours from the departure of a vessel of war of the other belligerent.

Sixth. The plant, establishments, buildings, and all works necessary to the construction, maintenance, and operation of the canal shall be deemed to be part thereof, for the purposes of this convention, and in time of war, as in time of peace, shall enjoy complete immunity from attack or injury by belligerents, and from acts calculated to impair their usefulness as part of the canal.

Seventh. No fortifications shall be erected commanding the canal or the waters adjacent. The United States, however, shall be at liberty to maintain such military police along the canal as may be necessary to protect it against lawlessness and disorder.

Article III. The high contracting parties will immediately, upon the exchange of the ratifications of this convention, bring it to the notice of the other Powers, and invite them to adhere to it. (It was also provided that to be effective, the treaty should be ratified within six months. But this time was later extended to March 5, 1901.)

On March 9, the Senate Committee on Foreign Relations, Senator Morgan dissenting, introduced the following amendment to the treaty: "It is agreed, however, that none of the immediately foregoing conditions and stipulations in Sections 1, 2, 3, 4, 5 [Article II], shall apply to measures, which the United States may find it necessary to take for securing by its own forces the defence of the United States and the maintenance of public order." In supporting this amendment the committee stated that the Suez Canal Treaty expressly reserved the right to the Ottoman Empire to suspend the operations of the treaty for the purpose of defending Egypt and its other possessions on the eastern coast of the Red Sea. Now the present treaty was stated to be substantially the same as that of the Suez, and therefore it should embody a similar stipulation, permitting the United States to defend itself in case of war. But irrespective of this reasoning the amendment should be adopted by the United States "upon the highest considerations of prudence and right." Objection was made to the amendment on the ground that the geography of the Red Sea with reference to the Suez Canal was totally different from that of the United States with reference to the proposed Nicaragua Canal. As the United States had no possessions near Nicaragua, the argument for the amendment had no force. Furthermore it seemed to be forgotten that the Suez Canal convention, while it permitted the Ottoman Emperor to defend Egypt, qualified this permission by prohibiting him from interfering with the free use of the canal by neutrals, or from erecting permanent fortifications near the canal. In fine, the only effect of the proposed amendment would be to annul the neutralization of the canal. When it became evident that the Senate would not, during the session, ratify the treaty, whether or not it was amended, arrangement was made to postpone action until the following session. On December 20, the Senate by a vote of 55 to 18 ratified the treaty, including the proposed amendment and including, also, two additional amendments as follows: (1) The insertion in Article II., after the reference to Article VIII. of the Clayton-Bulwer Convention, of the words, "which convention is hereby superseded." (2) The excision of Article III., which provides that "the High Contracting Parties will, immediately upon the exchange of the ratifications of this convention, bring it to the notice of other Powers and invite them to adhere to it."

Discussion of the Amendments.—The argument in favor of these three amendments as a whole was briefly as follows: That the invitation to other Powers to guarantee the neutrality of the canal would be practically inexpedient, and would in principle violate the Monroe Doctrine. For, by such a guarantee, the foreign Powers would have a right to station forces by the canal whenever, in their opinion, the United States was not fully maintaining the canal's neutrality. But by such action the Powers would be interfering in Central America and would acquire power there, which was precisely what the Monroe Doctrine was designed to prevent. In the second place, the guaranteed neutrality of the canal, and the free passage afforded thereby alike to the merchantmen of neutrals and the warships of enemies, would give advantage to any naval power which was at war with the United States. For although at present such a power could harass the Pacific Coast only by passing through the straits of Magellan or the Suez Canal, it would be able if the treaty were not amended, to pass its ships through the proposed Nicaragua Canal and strike both the eastern and western coasts of the United States. Thirdly, the abrogation of the Clayton-Bulwer Treaty was necessary because this treaty not only guaranteed the general principle of neutrality, but it had been drawn with the view of the construction of the canal by private enterprise. The entirely altered conditions which had since arisen, therefore, made the treaty voidable by international law. It was not proper or expedient that the United States should permit England to think that this country was longer bound by that treaty, or leave the matter in doubt.

On the other hand, it was argued that the modifications of the Hay-Pauncefote Treaty made by the Senate, instead of maintaining the Monroe Doctrine, tended to induce its violation. Because as none of the foreign Powers excepting England was invited to guarantee the canal's neutrality, it followed that they were all left at perfect liberty to disregard the terms of the treaty. Therefore, whenever it was expedient for them to do so, they would, if they were able, seize the canal and acquire there a sphere of influence. Furthermore, it would be to their advantage to acquire there any and all influence they could if any discrimination should be made against them by the United States in the matter of tolls and the passing of their ships through the canal. It was stated in addition that the undertaking of the United States to hold the canal by its own efforts and force would act disadvantageously in time of war. For naval Powers would immediately make every effort to seize the canal, and, if successful, would prevent the passage of American ships from the Atlantic to the Pacific, besides passing their own ships through the canal at will. It was said that it was much more to the advantage of

the United States in time of war to be able to pass its own ships freely from one coast to the other than it would be for a foreign power to be able to strike this country on the Pacific. Because the United States through its many coaling stations on the Pacific would be able to defend itself vigorously, while there were no coaling stations in that neighborhood which foreign ships could use. As to the abrogation of the Clayton-Bulwer Treaty the opponents of this amendment stated that that convention was a valid and binding one, and that its invalidation was a direct violation of treaty obligations by the United States.

It seemed probable, at the end of the year, that Great Britain would not ratify the treaty as amended by the Senate.

Isthmian Canal Commission.—The preliminary report of the Isthmian Canal Commission (see CANALS), appointed in 1899 to consider all questions relating to the construction and control by the United States of a canal through the American isthmus was handed to the President on November 30, 1900. The committee, as stated under the article CANALS, reported unanimously in favor of what is known as the Nicaragua Canal project. From the standpoint of engineering alone and of the relative advantage to shipping, the commission would apparently have chosen the Panama rather than the Nicaragua Canal; but while there was no obstacle in the way of the Nicaragua project so far as the Nicaraguan governmental concessions to private companies were concerned, the government of Colombia had already made canal arrangements with the French Panama Canal Company. These arrangements prescribed that the Panama Company should (1) never alienate its concession to the representatives of any other nation; and (2) that until 1967, when the entire plant of the Panama Company reverts to the Colombian government, the Panama Company should pay annually to the Colombian government not less than \$250,000 American gold. Unless simultaneous agreements could be made with the Colombian government and the Panama Company it would be impossible, therefore, for the United States to take over the construction and operation of the Panama Canal. The commission reported that the Panama Company had issued securities to a par value of over \$435,000,000, but that the actual value of the work done was not greatly in excess of \$34,000,000. The stockholders of the Panama Company would, of course, in case of sale to the United States, wish to obtain a larger return for their stock than the amount of work done was worth to the United States. So that although correspondence had been opened with the president of the Panama Company, it seemed unlikely that any satisfactory arrangements could be made. For these reasons it seemed to the commission that the Nicaragua Canal project was the more feasible one.

Commercial Expediency of the Canal.—During the year, and especially after the report of the commission, there was much discussion as to whether or not the Nicaragua Canal, if constructed, would pay. The commission without presenting in its preliminary report any definite data on this subject seemed to assume that the tonnage going through the canal would be ample to pay interest on the cost of construction, and also to defray the expenses of maintenance. The estimated cost of the canal was about \$200,000,000. The maintenance of the canal, in view of its 129 miles of artificial waterway, and of the immense annual rainfall in Nicaragua, could not well be less than 1 per cent. of the cost of construction—that is, \$2,000,000—and might be much more. The canal, therefore, would have to bring in at least \$9,000,000 a year to pay for maintenance and 3½ per cent. interest on construction; this, moreover, would not leave any margin for a sinking fund. The factors determining the proceeds obtainable by the canal would, of course, be the tonnage passing through the canal and the toll-rate collected thereon. To ascertain in a rough way what the tonnage would be the commission examined into the returns of the Suez Canal. In 1899, it appeared that 9,895,630 tons passed through the Suez Canal, giving, by a toll of \$2 per ton, a gross revenue of \$17,624,553. But it seems evident that neither would this tonnage pass through the Nicaragua Canal, nor could the same tolls be charged. For the Suez Canal lies directly in the route of the main commerce of the world. That is, it connects substantially all European ports with the East—India, Australia, China and Japan. There is here, moreover, no possible railway competition and the amount of tolls is regulated only by the added expense that would be entailed on vessels sailing around the Cape of Good Hope. The Nicaragua Canal would have radically different conditions to meet. In the first place, commerce from European ports to the East would in general prefer the Suez Canal: (1) Because it is a shorter line; (2) because it allows of stopping at several important ports on the way; (3) because of the superior coaling facilities of the Suez route. In general, therefore, the Eastern trade would not follow the Nicaragua Canal, even if tolls were much lower than the Suez. Commerce between the European ports and ports on the western coast of South America would probably go through the Nicaragua Canal to a large extent. At the same time this route would come into competition with sailing vessels around

the Horn, as would also commerce from the United States to those South American ports. Commerce both from Europe and eastern United States ports to ports on the western coast of the United States would come into competition with the transcontinental railways, and the same railway competition would be experienced in commerce between the eastern and western coasts of the United States proper. It would naturally be expected that these last two items of commerce would be the largest which could utilize the Nicaragua Canal, but all the evidence goes to show that the transcontinental lines would make a strenuous fight to retain their present through freight traffic, even if they had to materially lower their rates. In other words, there is not a single large natural route for commerce which the Nicaragua Canal would not have to compete for. This competition would not only reduce the total amount of canal traffic, but it would also force down the toll-rate. It seems probable, therefore, that not only would the total tonnage be comparatively small—at the most, 5,000,000 tons annually—but that a toll-rate could not be charged greater than \$1 per ton. The revenue thus accruing would certainly not suffice to pay interest on the cost of construction, and might very probably be not more than enough to pay for the cost of maintenance. Whether or not the value of the canal to the United States from the point of view of bringing together the interests of the East and West of the country, and of aiding in the defence of the coast in time of war, is so great as to offset the possible commercial loss involved is a question which seems undecided.

NICKEL. The production of nickel in the United States in 1899 amounted to 22,500 pounds, and that in 1900 is estimated at 20,000 pounds. In both years it came from the deposits at Mine La Motte, Mo., and the United States refineries still depend to a large extent upon the Canada ores and matter produced in the Sudbury district of Ontario.

NIETZSCHE, FRIEDRICH WILHELM, a German philosophic writer, died August 25, 1900. He was born at Bröcken, Saxony, in 1844. When but 5 years old he lost his father, a Protestant clergyman of Polish descent, and was brought up by his mother and sister in the spirit of religious devotion. They gave him an excellent training in music, for which he early evinced a strong fondness. In the quiet atmosphere of the home he grew an inactive, contemplative boy, given to endless self-analysis and dreams of beauty and grandeur. He early realized, however, the necessity of a mental and moral discipline, and having a dislike for the exact sciences, studied classical philology at Bonn and Leipzig. For a similar reason he approved of the military discipline during his year of service in the army. In 1869 he accepted a call to the chair of classical philology at the University of Basel. It was in Switzerland that he first met Wagner creating his *Siegfried* in seclusion at Tribschen. To the feverish imagination of Nietzsche he appeared a colossus of lofty thought and emotion. Wagner believed that Schopenhauer's theories were the philosophic expression of his art, and Nietzsche became a fervent follower of Schopenhauer, claiming that the ideals revealed by Wagner and Schopenhauer were destined to create in Germany a spiritual life equal in grandeur to that of ancient Greece. However, not pessimistic inertia, but heroic activity alone could bring about the realization of this spiritual ideal, to which the ugly illusion of individual happiness should be sacrificed without hesitation. The works of this period, both as to soundness and stability of philosophic theories, are products of æsthetic exaggeration. But Nietzsche had a beautiful way of saying things, and they passed for serious thought, especially with imaginative minds. In 1876, at Bayreuth, he again met Wagner preparing for the opening of his theatre. The compromises of a practical nature and the endeavors to win over newspaper critics were a rude shock to him. He ceased to believe in Wagner and Schopenhauer and, along with them, in God and religion. The romantic pessimism of Schopenhauer and Wagner he now denounced as the product of low vitality and weakness of the will characterizing our civilization, while the Christian religion generates nothing but weakness and cowardice. All philosophic theories connected with the doctrine of pity and self-denial were denounced as obnoxious: consoling illusions are unnecessary to the emancipated mind. The works of this period (1876-81), whether the ideas be acceptable or not, exhibit great keenness of psychological analysis. They include: *Menschliches, Allzumenschliches*, written in the form of aphorisms for the anniversary of Voltaire's death (continued in *Vermischte Meinungen und Der Wanderer und sein Schatten*) and *Morgenröthe*.

The third and last period in Nietzsche's career extended from 1881 to 1889, when physicians pronounced him incurably insane. He had long suffered from severe headaches, on account of which, as far back as 1879, he was obliged to resign his professorship at Basel. His malady, partly hereditary, was due to overwork and abuse of hypnotics. During the third period Nietzsche's philosophy assumes its definite and final form. It is a merciless criticism of contemporary morals and of the decadence of modern society. In his *Jenseit von Gut und Böse* he argues that

all current notions of good and evil, right and wrong, truth and falsehood are false. They do not exist as such: whatever raises vitality and emotions is valuable without reference to morals. His motto now is *fiat vita, pereat veritas*—i.e., "let there be life, perish truth!" He now proclaims a new type, the "overman" (*uebermensch*), as contradistinguished from the "quite-man" (*allzumensch*) of the second period. The ideal is the removal of all obstacles to the free development of all the forces of this "end all and be all" overman. Man should not hesitate either to endure or to inflict pain in his effort to bring about the reign of "overman."

The principal work of this period, the prose poem *Thus Spake Zarathustra*, has consequently for its leading ethical idea the denial of all obligations not necessitated by the bodily and intellectual evolution of the individual. The doctrine must, however, not be confounded with philosophical anarchism, the ideal of which is happiness for all; "Zarathustra" is far from believing in the equality of men, and is emphatic in his denial of the very possibility of happiness. *Thus Spake Zarathustra* was first conceived in 1881 and published in 1883-85; an excellent English version by Tille appeared in 1896. The publications of the third period include besides: *Die fröhliche Wissenschaft* (1882), *Zur Genealogie der Moral* (1887), and *Der Fall Wagner* (1888). Nietzsche's complete works in 10 volumes were published at Leipzig in 1895. A biography in 2 volumes by his sister, Elizabeth Förster Nietzsche, appeared in 1895-97.

NIGERIA, a large region in West Africa extending from the Gulf of Guinea north to the French Soudan, comprises two British protectorates, Northern Nigeria and Southern Nigeria. For some years prior to January 1, 1900, the former was known as the Niger Territories, and the latter as the Niger Coast Protectorate. The area and population of Nigeria have not been determined with any degree of accuracy. The number of inhabitants has been estimated at from 25,000,000 to 40,000,000, and the total area at from 350,000 to 400,000 square miles; some estimates, indeed, place the area as high as 500,000 square miles. Nigeria is bounded on the south by the German protectorate of Cameroon, the Gulf of Guinea, and the British protectorate of Lagos, on the west by Lagos, the French colony of Dahomey, and the French Soudan, on the north by the French Soudan, and on the east by Lake Tchad and Cameroon. On January 1, 1900, the administration of Northern Nigeria was taken over by the British government from the Royal Niger Company (British) and the protectorate was erected. At the same time the frontier of the Niger Coast Protectorate was extended northward, and the name of that possession changed to Southern Nigeria. The area of the latter protectorate, before this change in boundary, was only 3000 or 4000 square miles; its present area has not been determined. The new boundary between Northern and Southern Nigeria starts from the Cameroon frontier at a point near Ashaku and runs west to the Lagos boundary at Owo, crossing the Niger River a little north of Idda. See the two articles following.

NIGERIA, NORTHERN, formerly called the Niger Territories, is a British protectorate of West Africa. It is administered by a high commissioner (Brigadier-General F. J. D. Lugard), who is assisted by several official residents. The greater part of Northern Nigeria consists of the Fula, or Sokoto, empire, including several subordinate sultanates, among which are Kano, Banchi, a part of Adamawa, Gandu, Bakundi, Takum, Katsena, Donga, Ilorin, Muri, and Nupe. The protectorate also includes most of the native kingdom of Bornu and the Borgu country. In the Sokoto country Mohammedanism prevails, while farther south paganism is dominant. The permanent capital and military headquarters have not yet been determined upon. The troops of the protectorate consist of about 2500 natives, commanded by Colonel Sir James Willcocks. The British government maintains the total prohibition of the importation of spirituous liquors into the protectorate, established by the Royal Niger Company in 1890. Northern Nigeria has valuable agricultural resources, and parts of the country are said to be rich in minerals. Cotton, indigo, rubber, palm oil, palm kernels, hides, ivory, and gum are produced. Silver, tin, lead, and antimony are known to occur, but hitherto no gold has been found. Statistics of the finance and commerce of the new protectorate are not yet available. See the foregoing article.

In 1900 were published the reports of two British expeditions undertaken in the previous year to suppress insubordination among the natives of Northern and Southern Nigeria. The operations of the Central Division Expedition, which took place in Northern Nigeria in February and March, effected the destruction of 19 towns, as a result of which the inhabitants of 175 towns submitted, 1000 guns were surrendered, and 9000 others were brought in to be stamped according to the requirements of the Arms ordinance of 1894. Thus an extensive district was placed under the direct control of the government.

NIGERIA, SOUTHERN, called the Niger Coast Protectorate prior to January

1, 1900, is a British protectorate lying between the Gulf of Guinea and Northern Nigeria. On the east is Cameroon and on the west Lagos and the Bight of Benin. The protectorate is administered by a high commissioner (Sir R. D. R. Moor), who is assisted by several sub-commissioners. The seat of government is the port Old Calabar (population, about 15,000); other ports are New Calabar, Bonny, Burutu Akassa, Wari, Brass, and Opobo. Customs are collected at these ports for the whole of Nigeria, and are afterward allocated for the northern and southern protectorates. The revenue and expenditure for the fiscal year 1898 were £153,181 and £145,440 respectively; for 1899, £169,567 and £146,751 respectively. An accumulated balance at the end of the latter fiscal year amounted to £35,976. Of the revenue for 1899, £160,669 were derived from customs. In this fiscal year (1899), 375 ships cleared, as against 340 in the preceding year, and 96.6 per cent. of the volume of trade was British. The revenue for the fiscal year 1900 was £164,108. The principal imports are cotton textiles, hardware, cooper's stores, and spirituous liquors; the leading exports are palm oil, palm kernels, rubber, ivory, and ebony. In the fiscal year 1899 the imports and exports amounted to £732,639 and £774,647 respectively; in the fiscal year 1900, imports, £725,798, and exports, £888,954. See NIGERIA.

A report of the military operations of the Benin Territories Expedition in 1899 was published in 1900. These operations were carried out in the region subdued by the British after the massacre of 7 European officers and 150 carriers in January, 1897. The British expedition of April and May, 1899, dispersed the followers of the chiefs and destroyed the camps and five villages.

NIUCHWANG. See CHINESE EMPIRE (paragraph Cities of China).

NOBLES OF THE MYSTIC SHRINE. See MYSTIC SHRINE, NOBLES OF.

NOISE NUISANCE. See PUBLIC HEALTH.

NORRIS, FRANK, an American author, was born in 1870; makes New York City his home, and during the Spanish-American War was correspondent for *McClure's Magazine*. He has published one poem, *Yvernette*, but is chiefly known for the stories *McTeague* and *Blix*. *A Man's Woman* was published in 1900.

NORTH CAROLINA, a south Atlantic State of the United States, has an area of 52,250 square miles. The capital is Raleigh. North Carolina was one of the original thirteen States.

Mineralogy.—The industry of granite quarrying received a marked impetus in 1899, the value of the total output for the year being \$225,544, as compared with \$79,969 in the preceding year. The total production of sandstone was valued at \$10,300. The iron ore mined in the State included 47,616 long tons of brown hematite and magnetite, valued at \$72,622. Gold shows a decreased production during 1900, whereas the output of silver increased; the estimated yield was: Gold, 2468 fine ounces, value, \$51,018; and silver, 13,093 fine ounces, value, \$7936. The entire production of coal was from the Cumnock mines in Chatham County, and the output for 1899 was 26,896 short tons, valued at \$34,965, the largest yield in the history of the State, and a gain of 15,401 tons over 1898, when the product was reduced by a fire in the mines.

Agriculture.—The total commercial crop of cotton for the season 1899-1900 was 503,825 bales. Federal officials estimated the area devoted to cotton culture in 1900-01 at 1,342,000 acres, and the yield at 199 pounds of lint cotton per acre. The following shows the production and value of other crops for the year 1900: Corn, 29,790,180 bushels, \$16,980,403; wheat, 5,060,803 bushels, \$4,887,858; oats, 5,046,117 bushels, \$2,270,753; rye, 411,287 bushels, \$312,578; potatoes, 1,063,474 bushels, \$691,258; and hay, 176,680 tons, \$1,978,816. Returns from the tax collectors show that in 1899 the live stock comprised: Horses, 174,368, valued at \$6,389,123; mules, 130,887, \$5,264,450; jacks and jennets, 1026, \$43,866; goats, 42,258, \$27,795; cattle, 585,625, \$4,654,247; hogs, 1,174,717, \$1,650,261; and sheep, 291,305, \$295,403. The *Bulletin* of the National Association of Wool Manufacturers estimated the wool clip for 1900 as follows: Number of sheep, 223,497; wool, washed and unwashed, 1,117,485 pounds; wool, scoured, 636,937 pounds.

Industries.—Grain and fruit distilleries in operation during the fiscal year ended June 30, 1900, numbered 1258—a decrease of 230 in a year. The amount of fruit brandy produced was 28,568 gallons; spirits rectified, 667,321 gallons; and distilled spirits gauged, 2,694,226 gallons. In 1899 there were 29 cigar factories and 155 tobacco factories, and the combined output during the calendar year was 10,838,794 cigars, 957,694,000 cigarettes, 21,291,596 pounds of plug tobacco, 13,660,805 pounds of smoking, and 39,825 pounds of snuff. Thirty-three new cotton mills, with 311,600 spindles and 5053 looms, were established during 1900. The report of the commissioner of labor and statistics shows that at the end of 1900 the status of the textile industry was as follows: Number of cotton mills, 185; knitting mills, including silk and jute, 30; woollen mills, 11; aggregate number

of spindles, 1,297,771; of looms, 29,680. In the knitting mills 2028 machines were operated, and 38,647 persons were employed. Georgia and North Carolina together produced 17,835 long tons of pig iron in 1899, and 28,084 long tons in 1900.

Commerce.—During the fiscal year ending June 30, 1900, the imports of merchandise at the ports of Pamlico and Wilmington aggregated in value \$113,583; exports, \$10,977,516; total foreign trade, \$11,091,099. There was a decrease of \$31,677 in imports, an increase of \$3,387,135 in exports—i.e., a net increase in the total foreign trade of \$3,355,458.

Transportation.—The new railway construction reported for the calendar year 1900 amounted to 43.10 miles, giving the State a total mileage of 3696.67. The assessed value of railroad, steamboat and canal property in 1900 was \$33,596,060, a decrease from 1899 of \$66,479. The decrease in the assessed value of railroad property alone was \$20,918, and of steamboat and canal property, \$45,561.

Banks.—On October 31, 1900, there were 31 national banks in operation and 11 in liquidation. The capital stock aggregated \$3,046,000; circulation outstanding, \$1,650,889; deposits, \$7,968,610; and reserve held, \$1,703,248. The State banks, June, 30, 1900, numbered 54, and had capital, \$2,217,231, deposits, \$6,345,312, and resources, \$10,102,386; private banks, 25, with capital, \$274,985, deposits, \$1,218,328, and resources, \$1,862,052; and stock savings banks, 9, with capital, \$158,972, depositors (estimated), 8550, deposits, 1,717,158, and resources, \$1,980,113. During the year ending September 30, 1900, the exchanges at the clearing-house, at Wilmington, aggregated \$48,148,948, an increase over the preceding year of \$5,411,727.

Finances.—The balances on hand, December 1, 1899, were \$110,203; State receipts during the fiscal year, \$1,629,798; disbursements, \$1,648,013; balance, by auditor's ledger, December 1, 1900, \$91,988. The total bonded indebtedness in 1900 was \$6,527,770. The assessed valuations in 1899 were: Real estate, \$165,968,278; personal property, \$86,923,457; telegraph and telephone property, \$734,123; express company, \$117,370; railroad, steamboat, and canal property, \$33,596,060; total, \$287,339,288—a net increase in a year of \$18,036,900.

Education.—The school population in 1899 was estimated at 626,200. The enrolment in the public schools was 390,616, and the average daily attendance, 207,310. There were 8204 teachers, and 6784 buildings used as schoolhouses. For secondary education in 1899, there were 17 public high schools, with 37 teachers and 937 secondary students; and 119 private secondary schools, with 343 teachers and 5649 secondary students. Six public normal schools had 20 teachers and 810 students in normal courses, and 7 private normal schools had 31 teachers and 366 students in normal courses. Fifteen colleges and universities for men and for both sexes reported 150 professors and instructors, 2480 preparatory, collegiate, and graduate students, and a total income of \$200,314; 2 schools of technology reported 39 professors and instructors, 389 students in all departments, and a total income of \$53,375; and 9 colleges and seminaries for women reported 125 professors and instructors, 1093 students in all departments, and a total income of \$110,700. The professional schools comprised: 3 theological schools, with 11 instructors and 50 students; 3 law schools, with 6 instructors and 160 students; and 3 medical schools, with 22 instructors and 168 students.

Population.—According to the United States census, the population in 1890 was 1,617,947; in 1900, 1,893,810; increase for the decade, 275,863, or 17.1 per cent. The three largest cities, with population in 1900, are: Wilmington, 20,976; Charlotte, 18,091; and Asheville, 14,694.

Restrictions of the Franchise.—On August 2, the State election for governor and State and county officers resulted in a victory for the Democratic ticket, headed by Charles B. Aycock, and in the adoption, by a majority of nearly 60,000, of a constitutional amendment framed by the Legislature elected in 1898, disenfranchising the illiterate negroes. The provisions of this amendment, around which centred the main interest of the election, are briefly as follows: 1. Except as hereinafter provided, only those male persons shall henceforth be entitled to vote who are able to read and write any section of the Constitution in the English language, and who, on or before the first day of May preceding the election at which they propose to vote, have paid their poll-tax for the previous year. 2. But no male person who was on or before January 1, 1867, entitled to vote under the laws of any State wherein he resided, and no lineal descendant of such person, shall be disenfranchised by reason of his failure to possess the education qualifications herein prescribed, provided that he has already registered or shall register prior to January 1, 1908, and any person so registered shall have the right to vote at any and all elections, upon payment of his poll-tax. 3. This amendment to the State constitution is presented and adopted as one indivisible plan for the regulation of the suffrage, with the intent and purpose to so connect the different parts, and to make them so dependent upon each other, that the whole shall stand

or fall together. The effect of the suffrage clauses of this amendment is, in brief, to permit all citizens to vote, irrespective of color, who can read and write the English language; to permit all persons to vote who were citizens of the United States prior to 1867, to permit to vote, without educational qualifications, such of their descendants as come of age before 1908, and to debar illiterate immigrants. The immediate purpose of the amendment was to disenfranchise the negroes of the State. In intent, therefore, the amendment violates the Fifteenth Amendment to the Constitution of the United States, which provides that "the right of the citizens of the United States to vote shall not be denied or abridged by the United States or by any State on account of race, color, or previous condition of servitude." Lest the courts might on this account declare illegal that clause of the State amendment which permitted those citizens or their descendants to vote, irrespective of educational qualifications, who had been qualified to vote at the time of the Civil War, a clause was added to the amendment, which bound together all the clauses in one indivisible scheme, so that the entire bill would have to be approved or condemned, and could not be dealt with by the courts in its separate items.

Direct Election of Senators.—In accordance with a resolution adopted at the State convention, the Democratic State committee authorized a primary to be held on November 6, for the nomination by popular vote of a Democratic candidate for United States senator. All white voters were declared to be eligible to vote at this primary who had voted with the Democrats at the last State election, or who should vote the Democratic ticket at the national election to be held on the day of the primary. It was believed that the great popular interest taken in North Carolina in the election of a United States senator would result, under the provisions for voting at the primaries, in a much larger vote for the national Democratic ticket than would otherwise be obtained.

Elections.—In the State elections of 1900, the Democratic candidate for governor, Charles B. Aycock, received 186,650 votes, and the Republican nominee, Spencer B. Adams, received 126,296 votes. The Democratic candidate had thus a plurality of 60,354. All the State officers elected were Democrats. The election resulted in four changes in the congressional representation. Claude Kitchin (Dem.) was elected to succeed G. H. White (Rep.) in the second district; Edward W. Pou (Dem.) was elected in place of J. W. Atwater (Dem.) in the fourth district; Spencer Blackburn (Rep.) was elected in place of R. Z. Linney (Fus.) in the eighth district; and James M. Moody (Rep.) was elected to succeed R. Pearson (Rep.) in the ninth district.

The Legislature in 1900 consisted, in the Senate, of 18 Republicans, 8 Democrats, and 24 Populists; and in the House, of 53 Republicans, 33 Democrats, 32 Populists, and 2 Independents. In 1901 the Legislature will consist, in the Senate, of 7 Republicans, 41 Democrats, and 2 Populists, and in the House of 17 Republicans, 101 Democrats, and 2 Populists.

In the national election, 133,081 votes were cast for McKinley, and 157,752 for Bryan. In 1896, McKinley received 155,222 votes and Bryan, 174,488. Bryan's plurality was, therefore, increased from 19,266 in 1896 to 24,671 in 1900.

State Officers and National Representatives.—State officers for 1900: Executive—governor, D. L. Russell (Rep.); lieutenant-governor, C. A. Reynolds (Rep.); secretary of state, Cyrus Thompson (Pop.); treasurer, W. H. Worth (Pop.); auditor, H. W. Ayer (Pop.); attorney-general, Zeb Vance Walser (Rep.); insurance commissioner, J. R. Young (Dem.); adjutant-general, R. B. Royster (Dem.).

Supreme Court: Chief justice, W. T. Faircloth (Rep.); associate justices, R. M. Douglas (Rep.), W. Clark (Dem.), D. M. Furches (Rep.), and W. A. Montgomery (Dem.); clerk, Thomas S. Kenan (Dem.).

State officers for 1901: Executive—governor, C. B. Aycock; lieutenant-governor, W. D. Turner; secretary of state, J. B. Grimes; treasurer, B. R. Lacey; auditor, B. F. Dixon; attorney-general, R. D. Gilmer; superintendent of education, T. F. Toon; commissioner of agriculture, S. L. Patterson; commissioner of insurance, J. R. Young; adjutant-general, B. S. Royster—all Democrats.

Judiciary: Same as for 1900.

Congressional representatives for 1900 (56th Congress): Democrats (5), J. H. Small, C. R. Thomas, W. W. Kitchin, J. D. Bellamy, T. F. Kluttz; Republicans (3), R. Pearson, G. H. White and R. Z. Linney; Populist, J. W. Atwater.

Congressional representatives for 1901 (57th Congress): Democrats (7), J. H. Small (Washington), Claude Kitchin (Scotland Neck), C. R. Thomas (Newbern), E. W. Pou (Smithfield), W. W. Kitchin (Roxboro), J. D. Bellamy (Wilmington), Theod. F. Kluttz (Salisbury); Republicans (2), Spencer Blackburn (Winston) and James H. Moody (Waynesville).

Senators for 1900 (56th Congress): Marion Butler (until 1901) and Jeter C. Pritchard (until 1903).

Senators for 1901 (57th Congress): Jeter C. Pritchard (until 1903), from Marshall, Republican, and F. M. Simmons, Democrat.

NORTH CAROLINA UNIVERSITY OF, founded 1795, a State institution located at Chapel Hill, N. C.; had in 1899-1900, 47 instructors and 658 students in all departments. The university has \$100,000 in productive funds, its income for the last academic year amounted to \$50,000, and \$1000 was received from benefactions. The library contains 32,000 volumes.

NORTH DAKOTA, a northwestern State of the United States, has an area of 70,795 square miles. The capital is Bismarck. Dakota was organized as a Territory March 2, 1861; on November 2, 1889, the Territory was divided and formed into the States of North and South Dakota.

Mineralogy.—In 1899 the State surpassed all her previous records in the production of coal, with an output from 25 mines of 98,809 short tons, valued at \$117,500. The product increased 14,914 tons, or 15 per cent., and the value increased \$23,909, or about 25 per cent. over 1898, when only 18 mines were operated.

Agriculture.—The following shows the production and value of the principal crops for 1900: Wheat, 13,176,213 bushels, \$7,642,204; oats, 6,299,284 bushels, \$2,015,771; barley, 1,998,840 bushels, \$699,594; corn, 381,184 bushels, \$160,097; rye, 83,990 bushels, \$34,436; potatoes, 1,536,860 bushels, \$753,061; hay, 247,327 tons, \$1,397,398. The *Bulletin* of the National Association of Wool Manufacturers estimated the wool clip of 1900 as follows: Number of sheep, 362,512; wool, washed and unwashed, 2,356,328 pounds; wool, scoured, 924,531 pounds. Returns from the tax assessors show that the live stock in 1900 comprised: Horses, 248,217, valued at \$7,675,142; mules and asses, 4101, \$155,941; cattle, 368,947, \$5,285,824; hogs, 60,288, \$180,864.

Industries.—Fifty-one cigar factories in 1899 reported an aggregate production for the calendar year of 1,896,300 cigars. The following is a comparative statement of commercial and business failures for 1898, 1899 and 1900:

Year.	Number of Failures.	Number of Business Concerns.	Percentage of Failures.	Liabilities.
1898.....	17	5,003	0.34	\$97,049
1899.....	22	5,183	0.42	127,812
1900.....	22	5,601	0.39	208,763

It is seen by the above that while the number of failures in 1900 was the same as in 1899, the percentage for the former year was slightly decreased, owing to the increased number of business concerns operating in the State.

Railways.—The new railway construction reported for the calendar year 1900 was 121.57 miles, giving the State a total mileage of 2826.72.

Banks.—On October 31, 1900, there were 31 national banks in operation and 20 in liquidation, and the capital stock aggregated \$1,595,000; circulation outstanding, \$573,153; deposits, \$5,020,058; and reserve held, \$1,004,400. The State banks, July 2, 1900, numbered 129, and had capital, \$1,473,650, deposits, \$5,741,792, and resources, \$8,255,567. In the year ending September 30, 1900, the exchanges at the clearing-house at Fargo aggregated \$18,306,153, an increase over the preceding year of \$871,987.

Finances.—The assessed valuations in 1900 comprised realty, \$73,574,494; personal property \$26,262,466; railroad property, \$17,367,525; total, \$117,204,485. The tax levy was: General, 3.8 mills; bond interest, .5 mill; wolf bounty, .2 mill; total levy, 4.5 mills. The total receipts at the State treasury for the two years ending June 30, 1900, were \$1,223,216; disbursements, \$1,186,431; balance, July 1, 1900, \$36,785.

Education.—For secondary education in 1899 there were 25 public high schools, with 56 teachers and 1004 secondary students; and 2 private secondary schools, with 8 teachers and 68 secondary students. For higher education there were 2 public normal schools, with 18 teachers and 378 students in normal courses; and 1 private normal school, with 2 teachers and 35 students in normal courses. Three colleges for men and for both sexes reported 32 professors and instructors, 671 students in all departments, and a total income of \$59,428; and 1 school of technology reported 23 professors and instructors, 237 students in all departments, and a total income of \$71,646. No professional schools were reported.

Population.—According to the United States census the population of North Dakota in 1890 was 182,719; in 1900, 319,146; increase for the decade, 136,427, or 74.7 per cent. The two largest cities, with population in 1900, are Fargo, 9589, and Grand Forks, 7652.

Constitutional Amendments.—A constitutional amendment was adopted at the elections held in November, providing that the State Board of Equalization should assess the franchises and property of all express, telephone, telegraph and railroad companies. By another constitutional amendment which was adopted, a State Board of Pardons was established, consisting of the governor, attorney-general, the chief justice of the Supreme Court, and two citizens to be appointed by the governor.

Elections.—The State elections in 1900 resulted in the victory of the Republican nominee for governor, Frank White, who received 34,052 votes, over M. A. Waperman (Dem.), who received 22,275. The Republican plurality was thus 11,777. The representative at large to the 57th Congress is Thomas Marshall (Rep.), elected to succeed B. F. Spalding (Rep.). The Legislature in 1900 consisted, in the Senate, of 22 Republicans and 9 Fusionists; in the House, of 55 Republicans and 7 Fusionists. In 1901 the Legislature will consist, in the Senate, of 26 Republicans and 5 Fusionists; and in the House, of 56 Republicans and 6 Fusionists. In the national election, McKinley received 35,891 votes and Bryan, 20,519 votes. In 1896 McKinley received 26,335 and Bryan, 20,686 votes. McKinley's plurality thus increased from 5649 in 1896, to 15,372 in 1900.

State Officers and National Representatives.—State officers for 1900: Executive—Governor, F. B. Fancher; lieutenant-governor, J. M. Devine; secretary of state, Fred. Falley; treasurer, D. W. Driscoll; auditor, A. N. Carlblom; attorney-general, J. M. Cowan; superintendent of education, J. G. Halland; adjutant-general, E. S. Miller; commissioner of insurance, G. W. Harrison—all Republicans.

Supreme Court: Chief justice, J. M. Bartholomew; associate justices, Alfred Wallin and N. C. Young; clerk, R. D. Hoskins—all Republicans.

State officers for 1901: Executive—governor, Frank White; lieutenant-governor, David Bartlett; secretary of state, E. F. Porter; treasurer, D. H. McMillan; auditor, A. N. Carlblom; attorney-general, E. D. Comstock; superintendent of education, J. M. Devine; adjutant-general, E. S. Miller; commissioner of agriculture, R. J. Turner; commissioner of insurance, Ferdinand Leutz; commissioner of public lands, D. J. Laxdahl—all Republicans.

Supreme Court: Chief justice, Alfred Wallin; justices, N. C. Young and D. E. Morgan—all Republicans.

Congressional representative for 1900 (56th Congress): B. F. Spalding, Republican.

Congressional representative for 1901 (57th Congress): Thomas F. Marshall (Rep.), from Oakes.

Senators for 1900 (56th Congress): H. C. Hansbrough (until 1903), from Devils Lake, and P. J. McCumber (until 1905), from Wahpeton—both Republicans.

Senators for 1901 (57th Congress): Same as for 1900.

NORTHWEST TERRITORIES, a political division of the Dominion of Canada, composed of the following districts: Keewatin, created in 1876; Assiniboia, Saskatchewan, Alberta, and Athabasca, created in 1882; Mackenzie, Ungava, and Franklin, created in 1895. Yukon, which since 1898 has been a separate territory, on account of its peculiar interests, is here considered in connection with the Northwest Territories. The total area of the territories is over 2,529,140 square miles, and the population was estimated in 1898 at 130,000. The capital, Regina, in Assiniboia, has a population of 2000. The territories are administered by a lieutenant-governor and an executive council of 3 members, selected by the governor from among the members of the assembly and re-elected by the people. The legislative assembly consists of 31 members (including 3 members of the executive council), elected on manhood suffrage, and the territories have 2 seats in the Dominion Senate and 4 in the House of Commons. The Yukon territory is administered by a commissioner appointed by the council.

Industries.—Mining, which is the principal industry in the territories, has advanced considerably since 1898. The coal-fields of the Northwest Territories rank next in importance to those of Nova Scotia, and the total production of coal during the calendar year 1899 (including Manitoba) amounted to 334,200 net tons, of which 61,618 tons were exported. Gold mining is confined chiefly to the district of Saskatchewan and the Yukon territory. The output of gold in the latter during the calendar year 1899 amounted to \$16,000,000, against \$10,000,000 in 1898 and \$300,000 in 1896. The gold output in Saskatchewan, on the other hand, shows a gradual decline. The value of the output for 1899 was only \$15,000, as compared with \$25,000 in 1898 and \$50,000 in 1897. The oil regions of the territories are supposed to be very extensive, but so far very little has been done to develop the industry. The entrance fee for placer mining is \$15, and a royalty of 10 per cent. of the gross output is required by the government. The rental for river claims is \$100 per mile and 10 per cent. of the output in excess of \$15,000 for each five miles leased. The fishery industry of the territories is comparatively insignificant. The total value of

the catch for the calendar year 1898 was \$613,355, and of the fish exported in 1899, \$203,226. Fry distributed, 20,000,000, and amount of capital invested in the industry was estimated at \$256,581.

Commerce and Banks.—The official returns for the fiscal year 1899 give the total value of imports at \$860,031. The imports to the Yukon territory for the same period amounted to \$1,651,429. The total value of goods exported by the United States to the territories (including Yukon) amounted to \$2,441,133. Total amount of duty collected in the territories and Yukon was \$592,183. Total exports, domestic and foreign, \$343,294. The registered merchant marine of the Yukon territory consisted of 9 steamers, with a net tonnage of 2493. In 1899 the territories had 20 chartered banks and bank branches and 26 post-office savings banks, with 1294 depositors and \$246,226 deposits.

Railways, Telegraphs, and Post-offices.—The total length of the railways in the territories at the end of the fiscal year 1899 was 1930 miles. The government telegraph lines of the territories had a total length of 698 miles, with 17 offices. The revenue from the telegraph lines for 1899 amounted to \$1705, and the expenditures to \$14,507. The number of post-offices in the territories and Manitoba combined was 830, and the number of letters posted, 1,425,000. The Yukon territory had 5 post-offices, and the expenditures of the postal service in the territory amounted for the year to \$21,950, while the revenue was only \$9461. The 50 money-order offices of the territories issued during the year 38,623 orders, representing the sum of \$589,135.

Instruction.—The educational system of the territories is under the control of the Council of Public Instruction. Education is compulsory between the ages of 5 and 16, and no religious instruction is allowed before three o'clock in the afternoon, when attendance is optional. The number of schools in 1899 was 453, with 543 teachers and an enrolment of 18,801. The Roman Catholic schools, both private and public, had 1976 registered pupils. The appropriations for educational purposes during the year amounted to \$142,455.

Finances.—The total amount expended on capital account by the Dominion government for the territories from 1868 to June 30, 1899, was \$3,798,273. The amount expended by the Dominion on consolidated fund in 1899 was \$357,025 for the territories and \$1,098,379 for Yukon, an increase of \$1,051,352 over 1898 for the latter territory.

In 1900, at the last session of the Legislature a resolution was adopted requesting an inquiry into the needs of the territories and also as to the terms and conditions upon which they would be admitted as a separate province.

NORTHWESTERN UNIVERSITY, Evanston, Ill., chartered 1851. The number of students in the degree-conferring departments during the academic year 1899-1900 was, not counting duplicated names, 2358, distributed as follows: College of liberal arts, 614; medical, 325; law, 211; pharmacy, 235; dental, 608; woman's medical, 69; theological, 181; music, 284. A distinct graduate school has not yet been organized at Northwestern, but certain advanced courses have been offered in the college of liberal arts since 1891, and 42 students pursued such work during 1899-1900. The number of women in attendance at the university was 520; in the college of liberal arts 47 per cent. of the students were women. The matter of abolishing the B.S., Ph.B., and B.L. degrees and of making the A.B. degree the sole degree to be obtained in the college of liberal arts was again under advisement during the year. It was decided that at present such a change is inadvisable, but the faculty recommended that the degree B.L. be dropped after 1904. Entrance requirements were slightly modified along the lines of the suggestions made by the National Educational Association. A fact of interest in relation to the work of the university is the large number of students holding degrees from other institutions. The announcement is made that the university is now the richest institution of the Methodist Church, the net value of its property being \$5,043,549, of which over \$3,000,000 has been added since 1889. The income for the year was \$171,429.22. The sum of \$36,000 has been subscribed for the site of a building for university settlement purposes, and work was begun on the new Wesley Hospital for the medical college, to cost \$200,000. The Methodist Episcopal Church in the United States is now endeavoring to raise \$20,000,000 as a twentieth-century thank-offering, half of which is to be devoted to educational purposes. Of this, Northwestern University hopes to receive a large share. The library on May 1, 1900, contained 43,182 volumes and about 27,000 pamphlets, the increase for the year being 2899 books and 1827 pamphlets. About one-half of the books received were gifts.

NORWAY embraces the western and northernmost part of the Scandinavian peninsula, and is an independent kingdom, united to Sweden only through having a common ruler and diplomatic corps. It has an area of 124,445 square miles and a population estimated in 1899 at 2,193,000. For the fiscal year 1898-99 Norwegian

immigrants to the United States numbered 6705. The largest towns are Christiania, with a population of 221,073 in 1899; Bergen, 53,684; Trondhjem, 29,162; Stavanger, 23,899, and Drammen, 20,687. Lutheran Protestantism is the state religion, all other sects being tolerated, the Jesuits alone being forbidden. The University of Christiania in 1900-01 had about 1300 students. In 1896, 15,709 students attended the secondary schools, and 337,325 children attended the primary schools, education between the ages of 7 and 14 being compulsory. The soil of Norway is not favorable to agriculture, and necessitates the importation of foodstuffs. The mackerel and herring fisheries are very important, and the rich forests make lumbering and wood manufacturing leading industries. The chief imports are textiles, rye, coffee, coal, iron, and machinery. The principal exports are wood and timber, fish, and cod-liver oil. In 1898 the imports amounted to 280,179,000 kroner (krone equals 26.8 cents), and the exports to 159,349,000 kroner. In 1899 the imports were worth 310,500,000 kroner, and the exports, 159,400,000 kroner. The merchant marine of Norway is flourishing to an extraordinary extent. The tonnage of the country has increased 1400 per cent. in 25 years, and is third in the world, being exceeded only by that of Great Britain and the United States. In 1898 there were 1068 steamships, of 437,570 tons, and 5981 sailing vessels, of 1,120,808 tons; in 1900 the tonnage was estimated at over 1,600,000. Of the ships engaged in trade between Norway and foreign ports, 2498 steamers out of 3731, and 1694 out of 2773 sailing vessels were Norwegian. The merchant fleet in 1898 was manned by 51,603 seamen. The chief nations with which commerce is carried on are Germany, Great Britain, Sweden, Russia and Finland, and Denmark. Revenue is raised from customs, excise, stamps, income tax, and the exploitation of railways, telegraphs, telephones, and mines. The budget for July 1, 1899, to March 31, 1900, showed an income and expenditure of 78,900,000 kroner, the customs yielding 27,900,000 kroner; the railways, 8,605,000 kroner; income tax, 4,300,000 kroner; excise, 5,400,000; post-office, 3,530,000 kroner. The chief items of expense were the state railways, the army, the navy, education, and justice. The standing army of Norway is estimated at 25,000 men, though the total armed strength is officially 38,000. The militia is called out for national defence in case the regular troops are taken into Sweden. The important ships of the navy are the *Harald Haarfagre* and the *Tordenskjold*, of 3550 tons. The *Nonye*, a sister ship, was launched in 1900, and the *Eidsvold*, of the same type, was begun in the same year. The national Parliament, called the *Storting*, is elected by popular suffrage, and is divided into two chambers, the *Odelsting* and the *Lagthing*. There is a ministry and a council of state, which sends two delegates to the council of state at Stockholm.

History.—On December 15, 1899, the country finally attained what she had long fought for. The Norwegian emblem was removed from the Swedish flag, and Norway resumed her old banner. This concession, however, did not satisfy the Radicals and Liberals. A more important demand made was that Norway should be granted a separate consular service and diplomatic corps. This point, though actively discussed, did not take the form of a definite proposal; but a measure tending in this direction was brought forward in the *Storting*, and passed. It stated that all fees that Norwegian vessels were accustomed to pay to Swedish consuls in foreign harbors should henceforth be paid into a special fund at home, to be employed for national uses. The bill was sent to Stockholm for royal approval; but in spite of the determined attitude of the Norwegian representatives in the council of state, the prince regent refused to sign the measure, basing his refusal on the remonstrances made by Norwegian merchants and ship-builders. This attitude of the regent seemed to embitter the feeling between the two countries, and promises to produce trouble in the near future. In February and March the various political parties of Norway formulated platforms. The Left, supported in great measure by the Social Democrats, demanded a separate consular service and diplomatic corps. The Moderates stood for equality between Norway and Sweden. one diplomatic corps, but two consular services, the Norwegian consuls, however, being deprived of all diplomatic functions. The Conservative party acknowledged the need of reform in the consular service, but insisted on a single foreign office, the minister for foreign affairs to be either a Swede or Norwegian, and responsible to both national legislatures. The September elections to the *Storting* showed no change in party relation, the Lefts numbering 79, and the Rights and Moderates, 35, as against a Left of 77 and a Right and Moderate party of 37 in the preceding chamber. The Radicals and Liberals, encouraged by their unbroken strength, persisted in their anti-Swedish policy, and did their best to bring about a hostile feeling between the two countries. The growing difficulties were made apparent in November, when a change of ministry occurred as well as a change in the representation in the council of state at Stockholm.

NOTRE DAME, UNIVERSITY OF, a Roman Catholic institution of learning at Notre Dame, Ind., founded 1842; comprises departments of arts, science, engineer-

ing, law, and pharmacy, and preparatory schools. In 1899-1900 the faculty included 66 instructors, and the student body numbered 800 in all departments. The library contains 55,000 volumes. Receipts from benefactions for the last college year amounted to \$30,000.

NOVA SCOTIA, a province of the Dominion of Canada, with an area of 20,600 square miles, with a population of over 450,000. Capital, Halifax, with a population estimated in 1900 at 45,000. The province is administered by a lieutenant-governor and a responsible ministry. It has also two chambers, a legislative council of 21 members and a legislative assembly of 38 members, elected by the people on a property qualification.

Industries.—The principal industry of the province is mining, and the official returns for the fiscal year 1899 show considerable increase and activity in mineral production. The total output of coal, which is the principal mineral of the province, is given at 3,148,822 net tons, valued at \$4,650,813, an increase of nearly 600,000 tons over the production of the preceding year. The total amount of coal exported during the same year was 325,917 tons, as compared with 312,601 tons in the preceding year. The total output of gold during 1899 was valued at \$617,604, an increase of nearly \$90,000 over 1898. Considerable development in the steel industry has been reported during the year; and, according to these reports, Sydney, in Cape Breton, is to become a formidable factor in the production of steel, as mines and works are favorably located on the harbor. The laws of the province are not very conducive to the development of the mining industry. The province reserves all its minerals and ores, and leases its lands under royalties. The length of the term of lease is 20 years for gold and silver lands and 80 years for lands containing other minerals. The fishery industry of the province has considerably declined since 1897. The total value of the catch during the calendar year 1898 was \$7,226,035, against \$8,090,346 in 1897. The principal catch was: Lobsters, \$2,673,624; cod, \$1,890,614; haddock, \$532,648, and mackerel, \$523,594. The value of fish exported in 1899 was \$4,938,679, and the amount of fry distributed, 4,025,000. The amount of capital invested in the fishery industry was estimated at \$2,972,000. There were in 1898, 231 lobster canneries, employing 5185 persons. Out of total bounty of \$159,000 distributed by the government in 1898, \$103,730 was received by the fishermen of Nova Scotia.

Commerce and Banks.—The total value of imports has increased from \$6,949,216 in the fiscal year 1898 to \$7,425,140 in 1899. Of the total imports, \$2,757,217 came from the United States, and \$2,315,141 from Great Britain. Duty collected on imports during the year amounted to \$1,350,284. Exports, domestic and foreign, amounted to \$11,480,120, against \$10,930,936 in the preceding year. The number of commercial failures has decreased from 202 in the calendar year 1899 to 90 in 1900, and the amount of liabilities from \$1,037,205 to \$557,825. The registered merchant marine of the province comprised at the end of 1899, 1971 sailing vessels and 150 steamers, with a total net tonnage of 243,457. There were at the end of the fiscal year 1899, 69 chartered banks and bank branches and 56 post-office savings banks, with 12,294 depositors and \$3,254,705 deposits. There were also 16 government savings banks, with 17,168 depositors and deposits amounting to \$4,839,447. The clearings have increased from \$62,523,827 in 1898 to \$70,600,705 in 1899.

Railways, Telegraphs, and Post-offices.—The total railway mileage of the province at the end of the fiscal year 1899 was 909, not including 28 miles owned by coal and iron companies. The subsidies granted during the year amounted to \$2,571,802. The total length of government telegraph lines was 252 miles, of which 229¼ miles were land lines and 22¾ cable. There were at the end of 1899, 1686 post-offices, in which 10,500,000 letters were posted during the year. The 206 money-order offices issued 116,122 orders, representing a sum of \$1,565,164.

Instruction and Charities.—The school system of the province is under the control of a Council of Public Instruction and a superintendent of instruction. The local management of the schools is entrusted to trustees in the rural sections and school commissioners in incorporated towns. The official returns for the year ending July 31, 1899, give the number of public schools at 2390, with an enrolment of 100,617 and an average daily attendance of 55,919. There were also 1798 students in the county academies, 189 pupils in the normal school, and 134 in the model schools. The 6 government night schools had an attendance of 220, and the Victoria School of Art had 108 students. The 11 Indian schools were attended by 230 Indian children. The total amount received for educational purposes was \$814,450, of which \$246,462 was contributed by the government. The charitable institutions of the province consisted in 1898 of 1 general hospital, an institution for the deaf and dumb, a home for the blind, 1 asylum for insane, and 24 poorhouses, with 3170 inmates. Of the total amount of receipts for charitable institutions, \$134,478 was contributed by the government and \$33,269 obtained from other sources. The total expenditures for the year amounted to \$167,172.

Finances.—The revenue for the year ending September 30, 1899, was \$876,828. The principal sources of revenue were: Dominion subsidies, \$432,807, and mines, \$318,895. Total expenditures for the same year, \$852,379. Main items of expenditure: Education, \$248,758; debenture interest, \$123,089, and charities, \$115,644. The gross debt of the province amounted to \$3,808,813, and the total assets, exclusive of public buildings, \$1,341,272, leaving a net debt of \$2,467,541, or \$5.38 per head.

NOYES, Dr. HENRY DRURY, a celebrated American oculist, died in New York City, November 1, 1900, at the age of 68. He was born in that city, graduated from the New York University in 1851 and from the College of Physicians and Surgeons in 1855. A prominent specialist, he made valuable contributions to medical periodicals, and published an excellent *Text-book on the Diseases of the Eye*. His articles in the *Medical Record* on the importance of cocaine as a local anæsthetic in diseases of the eye went far to popularize Koller's discovery. For many years Dr. Noyes was professor of ophthalmology and otology in the Bellevue Hospital Medical College and executive surgeon to the New York Eye and Ear Infirmary.

OATS. The following table, published by the Department of Agriculture, division of statistics, shows the acreage, production, and value of oats in the United States in 1900:

STATES AND TERRITORIES.	OATS.				
	Acreage.	Yield per acre.	Production.	Value per bushel.	Total value.
	<i>Acres.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Cents.</i>	<i>Dollars.</i>
Maine.....	140,208	37.5	5,257,612	38	1,997,896
New Hampshire.....	30,526	32.6	995,148	38	378,155
Vermont.....	106,581	34.9	3,719,677	36	1,359,084
Massachusetts.....	14,967	36.8	550,786	38	209,299
Rhode Island.....	3,705	30.9	114,484	38	43,504
Connecticut.....	18,677	31.0	578,867	35	202,645
New York.....	1,596,870	27.9	44,598,974	32	14,252,473
New Jersey.....	95,008	29.6	2,812,059	31	871,748
Pennsylvania.....	1,221,698	31.1	38,000,872	30	11,400,252
Delaware.....	15,844	21.0	333,724	30	99,817
Maryland.....	74,309	24.0	1,783,416	81	552,859
Virginia.....	949,100	14.8	5,167,568	37	1,912,000
North Carolina.....	363,030	13.9	5,046,117	45	2,270,753
South Carolina.....	259,558	15.5	4,023,149	48	1,931,173
Georgia.....	467,536	15.0	7,010,040	49	3,434,909
Florida.....	83,470	11.3	878,211	50	160,106
Alabama.....	304,219	14.4	4,390,754	44	1,927,532
Mississippi.....	170,718	14.0	2,390,052	46	1,099,434
Louisiana.....	34,119	18.0	614,142	40	245,657
Texas.....	744,164	38.0	28,278,228	30	8,483,470
Arkansas.....	317,057	22.2	7,038,665	35	2,463,533
Tennessee.....	350,010	16.6	5,810,166	35	2,033,558
West Virginia.....	131,581	21.0	2,768,451	34	941,273
Kentucky.....	437,056	21.3	9,309,298	31	2,895,861
Ohio.....	1,061,593	38.0	40,340,534	26	10,489,539
Michigan.....	917,971	36.7	33,689,536	26	8,759,279
Indiana.....	1,372,050	32.7	44,666,035	23	10,219,189
Illinois.....	3,516,918	38.0	133,642,884	23	30,737,653
Wisconsin.....	1,936,611	32.0	61,971,552	23	14,253,457
Minnesota.....	1,662,978	25.2	41,907,046	24	10,067,001
Iowa.....	3,840,357	34.0	130,572,138	20	26,114,425
Missouri.....	901,291	27.4	24,695,378	23	5,679,936
Kansas.....	1,362,763	31.6	43,063,943	23	9,904,707
Nebraska.....	1,732,962	21.8	37,778,572	24	9,066,857
South Dakota.....	568,534	21.5	12,653,366	24	3,036,784
North Dakota.....	611,581	10.3	6,290,364	32	2,015,771
Montana.....	65,865	39.0	2,568,735	43	1,078,809
Wyoming.....	18,429	34.3	630,272	47	296,228
Colorado.....	99,768	32.8	3,272,290	43	1,407,123
New Mexico.....	7,641	30.1	229,904	46	110,397
Arizona.....					
Utah.....	25,577	35.9	918,214	44	404,014
Nevada.....					
Idaho.....	36,881	36.6	1,349,845	40	539,936
Washington.....	87,681	34.4	3,016,226	40	1,206,490
Oregon.....	177,447	18.5	3,282,770	41	1,345,686
California.....	60,972	24.6	1,477,771	46	679,775
Oklahoma.....					
United States.....	27,364,795	29.6	800,125,089	25.6	206,689,338

OBERLIN COLLEGE, at Oberlin, O., founded in 1833, includes theological college, women's and preparatory departments, and a conservatory of music, established in 1867. The faculty consists of 83 instructors, of whom 24 are attached to

the conservatory of music. The total enrolment of students for the last academic year was 1323, one-fourth of whom were preparatory students. The library contains 60,000 volumes and 40,000 pamphlets. The productive endowment amounts to \$1,006,288, and the income during the last college year was \$138,493, exclusive of \$125,396 received in gifts. Two buildings were erected during the year 1900, Severance Chemical Laboratory, at a cost of \$65,000, a gift of Louis H. Severance, of New York City, and Warner Gymnasium, at a cost of \$50,000, donated by Dr. and Mrs. Lucien C. Warner, of New York City.

OBOOK. See SOMALILAND.

OBSERVATORIES, ASTRONOMICAL. See ASTRONOMICAL PROGRESS.

OCBRE. The production of ochre in the United States in 1899 amounted to 3212 short tons, valued at \$39,505, and came from thirteen States, of which the three most important were Pennsylvania, Georgia, and Vermont. The number of producers in each State seldom exceeds two or three. Umber and sienna were also mined in small quantities in New York, Pennsylvania, and Missouri. Since these pigments are in great demand, owing to their stability of color and the fact that they can be mixed with either oil or water, a considerable quantity has to be imported from abroad to make up the deficiency in the native supply; and as a result there was imported in 1899, 9,780,497 pounds of ochre, valued at \$73,581; 1,739,036 pounds of umber, valued at \$13,326, and 805,145 pounds of sienna, valued at \$14,962.

The following figures give the world's production for 1898:

Quantity, Short Tons. Value.

United States.....	13,829	\$143,257
Great Britain.....	22,206	63,065
France.....	37,236	152,002
German Empire.....	9,642	31,737
Canada.....	2,340	18,531
Spain.....	220	800
Cyprus.....	3,206	4,656

ODD FELLOWS, INDEPENDENT ORDER OF, was organized in England in 1812, and in the United States in 1819, the first lodge in this country being established in Baltimore, Md. Mutual assistance is the primary object of the order. For the year ending December 31, 1899, the total relief paid was \$3,819,750.36; brothers relieved, 102,809; widowed families relieved, 6112; paid for relief of brothers, \$2,929,586.62; for widowed families, \$143,248.27; for education of orphans, \$50,709.06; for burying the dead, \$696,206.41. The male membership, including the grand lodges of Alaska, Canada, Mexico, Cuba, South America, Sandwich Islands, Japan, Australasia, Germany, Sweden, Switzerland, and France, is 890,965. An English order, entitled the Manchester Unity of Odd Fellows, and numbering 900,668, is not in affiliation with the American organization. The encampment branch numbers 130,067 members. Rebekah lodges: Sisters, 200,849; brothers, 125,297; chevaliers of the patriarchs militant, 15,274. Grand sire of the sovereign grand lodge, A. C. Cable, Covington, O.; grand secretary, J. Frank Grant, Baltimore, Md.

OGILVIE, CLINTON, an American landscape painter, died November 28, 1900. He was born in New York, where he studied under James M. Hart. He afterward spent many years abroad, painting pictures of French and Swiss scenery, which brought him a wide reputation. In 1864 he was elected associate member of the National Academy of Design. Among his paintings may be mentioned "The Valley of Schwytz, Switzerland" (1870); "Lake Como" (1871); "The Mountain Brook" (1876); "St. Barthélemy, near Nice" (1887).

OHIO, an east central State of the United States, has an area of 41,060 square miles. The capital is Columbus. Ohio was organized as a State, November 29, 1802.

Mineralogy.—Since 1894 Ohio has produced more crude petroleum annually than any other State. The output in 1899 was 21,142,108 barrels, valued at \$20,966,304—about 37 per cent. of the total production of the United States. The increase over 1898 in product was 2,403,400 barrels, and in value, \$8,761,094. The average price per barrel rose from \$0.651 in 1898 to \$0.9917 in 1899. The production of coal in 1899 was the largest in the history of the State. The total output was 16,500,270 short tons; spot value, \$14,361,903. Compared with 1898, this was an increase in production of 1,983,403 short tons, or 14 per cent., and in value of \$2,334,567, or 19 per cent. Ohio ranked fourth in number of tons produced and third in value of product among the coal-mining States. The total number of mines in operation was 441, and the most productive counties in their order were: Jackson, Hocking, Athens, Perry, Guernsey, Belmont, and Stark. The value of quarry products for 1899 shows an increase over 1898, the yields being: Limestone, \$1,793,604, and sandstone \$1,775,642. The total output of iron ore was 53,221 long tons, valued at

\$77,606—all of the carbonate variety, in the production of which the State continued to hold first rank.

Agriculture.—The following shows the production and value of the principal crops for 1900: Corn, 106,890,188 bushels, \$36,342,664; wheat, 8,523,876 bushels, \$6,051,952; oats, 40,340,534 bushels, \$10,488,539; barley, 622,566 bushels, \$267,703; rye, 513,023 bushels, \$282,163; buckwheat, 147,632 bushels, \$85,627; potatoes, 12,561,584 bushels, \$5,024,634, and hay, 1,652,797 tons, \$18,263,407. The *Bulletin* of the National Association of Wool Manufacturers made the following estimate of the wool clip for 1900: Number of sheep, 2,754,499; wool, washed and unwashed, 15,838,369 pounds; scoured wool, 7,760,800 pounds.

Industries.—In 1900 Ohio continued to hold second rank among the States in the production of pig iron, and surpassed all her previous records with an aggregate output of 2,470,911 long tons. In 1899 the production was 2,378,212 long tons, an increase over the preceding year of 391,854 long tons. The production of Bessemer steel ingots in 1899 was 1,679,237 long tons; open-hearth steel, 117,458 long tons; iron and steel structural shapes, 20,941 long tons; wire nails, 2,083,646 kegs, and cut nails, 386,215 kegs. There were 2143 manufacturers of cigars and 181 of tobacco, and their combined production for the calendar year 1899 was 604,097,171 cigars (the third largest amount produced in any State), 9,730,400 pounds of plug tobacco, 205,359 pounds of fine-cut, 8,467,313 pounds of smoking, and 780 pounds of snuff. The total amount of tobacco manufactured was 18,403,852 pounds. Grain and fruit distilleries in operation numbered 54, and the amount of fruit brandy produced during the fiscal year ending June 30, 1900, was 76,563 gallons; spirits rectified, 12,728,286 gallons; distilled spirits gauged, 38,613,445 gallons, and fermented liquors produced, 3,049,958 barrels. The total amount of oleomargarine manufactured was 15,198,463 pounds. Hogs packed and marketed at Cincinnati and Cleveland during the year ended March 1, 1900, numbered 1,145,526. During 1900 there were 405 commercial and business failures—about one-half of 1 per cent. of the 77,947 business concerns of the State.

Commerce.—The imports of merchandise at the Cuyahoga customs district during the fiscal year ended June 30, 1900, aggregated in value \$1,713,877; exports, \$3,493,040; imports at four other ports, \$1,938,331; exports, \$928,289; total foreign trade, \$8,073,537, an increase in a year of \$2,137,312.

Receipts of iron ore at the Ohio lake ports for the year 1900 were: Cleveland, 3,092,745 tons; Ashtabula, 3,515,409 tons; Conneaut, 2,408,880 tons; Lorain, 976,603 tons; Sandusky, 144,672 tons, and Toledo, 663,776 tons. Lake shipments of coal in 1900 were: Cleveland, 1,099,552 tons; Ashtabula, 1,140,069 tons; Conneaut, 109,848 tons; Lorain, 235,218 tons; Sandusky, 482,437 tons, and Toledo, 1,085,563 tons.

Railways.—The new railway construction reported for the calendar year 1900 amounted to 19.54 miles, giving the State a total mileage of 8920.96.

Banks.—On October 31, 1900, there were 279 national banks in operation and 115 in liquidation. The capital stock aggregated \$46,673,125; circulation outstanding, \$25,150,526; deposits, \$186,219,154, and reserve held, \$54,025,331. The State banks April 2, 1900, numbered 164, and had capital, \$14,223,600; deposits, \$85,157,634, and resources, \$105,829,130; private banks, 71, with capital, \$1,509,220; deposits, \$10,019,076, and resources, \$12,117,758; mutual savings banks, 4, with depositors, 86,181; deposits, \$39,738,121, and resources, \$42,278,022; and stock savings banks, 10, with capital, \$801,187; depositors (estimated), 13,411; deposits, \$4,797,854, and resources, \$6,941,085. In the year ending September 30, 1900, the exchanges at the clearing houses at Cincinnati, Cleveland, Columbus, Canton, Springfield, Toledo, Fremont, Akron, Youngstown, and Dayton aggregated \$1,726,813,567, an increase of \$162,284,242 in a year.

Finances.—The assessed valuations for the year 1900 were: For real estate, \$1,274,203,721; for personal property, \$559,849,507; total, \$1,834,053,228. This is an increase over the total for 1898 of \$73,795,785. The total State revenue for the last fiscal year was \$5,222,355.09, and the total expenditures were \$4,909,453.21.

National Guard.—The Ohio National Guard is composed of 21 staff officers, 49 cavalry, 200 artillery, and 4171 infantry. The total number of militia authorized is 9486, and the total State appropriation for military purposes, \$191,000.

Education.—The school census of 1899 showed a total enumeration of 1,209,735 persons between the ages of 6 and 21. The enrolment in the public schools was 828,500, and the average daily attendance, 613,337. There were 25,712 teachers, 13,077 buildings used as schoolhouses, and public school property valued at \$41,446,838. The total school revenue was \$13,112,824, and the expenditures, \$12,671,708, of which \$8,878,021 was for teachers' and superintendents' salaries. The average expenditure per pupil for the whole school year was \$20.66. There were 613 public high schools, with 1611 teachers and 42,968 secondary students; 53 private secondary schools, with 288 teachers and 2568 secondary students; 5 public normal schools, with 31 teachers and 587 students in normal courses; and 11 private institutions, with

91 teachers and 4104 students in normal courses. Thirty-four universities and colleges for men and for both sexes reported 697 professors and instructors, 8838 students in all departments, and a total income of \$1,236,764; 1 school of technology reported 20 professors and instructors, 250 collegiate and graduate students, and a total income of \$70,000; and 4 colleges and seminaries for women reported 85 professors and instructors, 497 preparatory, collegiate, and graduate students, and a total income of \$98,465. The professional schools comprised 13 theological schools, with 64 instructors and 462 students; 7 law schools, with 69 instructors and 707 students, and 13 medical schools, with 341 instructors and 1369 students.

Population.—The population, according to the United States census, was 3,672,316 in 1890, and 4,157,545 in 1900; increase for the decade, 485,229, or 13.2 per cent. The five largest cities, with population in 1900, are: Cleveland (the seventh largest city in the United States), 381,768; Cincinnati, 325,902; Toledo, 131,822; Columbus, 125,560, and Dayton, 85,333.

Hocking Canal.—The matter of the lease of the Hocking Canal to the Columbus, Hocking Valley & Athens Railroad Company, which had been pending since 1894, was decided in 1900 by a decision of the United States Supreme Court on February 26 and by act of the Ohio Legislature in conformity therewith, April 16. The Hocking Canal, extending from Carroll, in Fairfield County, where it joined the Ohio Canal, to Nelsonville, Athens County, was constructed by the State of Ohio under a grant of land by Congress in 1828. By the terms of the grant it was stipulated that when the canals, for the purpose of whose construction the lands were granted, had been put into operation they should "forever remain public highways." In 1894 the Columbus, Hocking Valley & Athens Railroad Company was authorized to build a railroad from Columbus to Athens, and on May 18 of that year the General Assembly passed an act leasing to the company the canal, in order that a line of railway might be built and operated along it. This legislative act was contested in the courts of Ohio, and was taken therefrom to the Supreme Court. The ground upon which it was thought to break the lease was that the State of Ohio in accepting the original grant of land from Congress had bound itself to the United States to maintain the canal forever. The court held, however, that the State had not so bound itself, and that the intent of the congressional act had only been to secure forever to the United States certain concessions in *whatever highways* were maintained by the State under the grant. In pursuance of this decision the Ohio Legislature passed an act stating that as the railway company had been put to heavy expense to maintain its title to the canal, it was until 1905 released from its obligation to pay a yearly rental to the State, providing, however, that the railroad would waive any claims it might have against the State for damages arising out of the suit, and would commence the construction of the railway before October 16, 1900, and would complete it before October, 1905.

Cincinnati.—In accordance with an annexation bill passed by the Ohio Legislature of 1900, an ordinance was passed by Cincinnati, to be submitted to the voters for ratification on May 29, providing for the annexation to the city of outlying villages whose aggregate population was about 25,000 and whose taxable property was about \$20,000,000. But before the time arrived for taking the vote it transpired that the villages had, in prospect of annexation, issued bonds, granted franchises, and entered upon various schemes of public improvements. These things reversed public sentiment in Cincinnati regarding annexation, and on May 21 the Board of Legislation rescinded its action.

Legislation.—By an act passed April 14, 1900, to take effect on July 1, the Legislature of Ohio made stringent regulations, similar to those which have been enacted in Pennsylvania and New York, for the qualification and admission of medical practitioners. The act provides that before any person is permitted to practise in Ohio he must present to the State Board of Medical Registration and Examination, which is to hold examinations simultaneously in Cincinnati, Cleveland, Columbus, and Toledo, satisfactory evidence that he has (1) received a good general education, and has (2) graduated from an approved school of medicine. Upon the presentation of this evidence the board is authorized to examine the applicant, and if the examination is satisfactorily passed, to issue a certificate to him, entitling him to practise medicine in the State. A reciprocity clause is included in the law, so that practitioners resident in other States in which the requirements are as rigid as those now made in Ohio may, upon moving to Ohio, be excused from taking examinations, provided, however, that practitioners in Ohio are accorded the same privilege by other States when they in turn move to them.

An act was passed on April 6 amending a section of the statutes so as to make the abandonment of legitimate or illegitimate children a felony, instead of a misdemeanor, as previously, and providing that such abandonment should be punished by severe penalties.

An act was passed on April 11 directing the governor to appoint a commission

of four, of whom at least one should be a representative of organized labor, to investigate and report to the governor not later than November 15, 1901, on desirable amendments in the system of convict labor at present enforced in Ohio. The object of the amendments which the commission was directed to recommend was to furnish remunerative and helpful employment to the inmates of the penal and reformatory institutions of the State and of the various workhouses of the State in such manner as to conflict as little as possible with the interest and welfare of free labor, and to prepare the inmates of those institutions after their discharge to qualify for employment which would give them honest self-support.

An amendment to the statutes was passed on April 16 permitting all cities in the State, with the exception of Cincinnati, Toledo, and Cleveland, to contract at any time for the purchase of private water-works and supplies without regard, as heretofore, to a specified price, beyond which the municipalities could not purchase.

A joint resolution was adopted on April 16 requesting the United States Congress to improve the Ohio and Erie and the Miami and Erie canals. The resolution set forth that the commercial interests of Ohio and of the territory tributary to the Great Lakes and to the Ohio and Mississippi rivers urgently demanded the improvement and enlargement as ship-canals of the Miami and Erie Canal from Toledo to Cincinnati and of the Ohio and Erie Canal from Cleveland to Coshocton.

Elections.—At the State elections, 1899, George K. Nash, the Republican candidate for governor, received 417,199 votes, and McLean (Dem.) received 368,176 votes. The Republican plurality was 49,023. Lewis C. Laylin (Rep.) was elected secretary of state. Ten changes were made in the representation of Ohio to the 57th Congress: R. M. Nevins (Rep.) was elected to succeed John L. Brenner (Dem.) in the third district; John S. Snook (Dem.) was elected to succeed David Meekison (Dem.) in the fifth district; C. Q. Hildebrand (Rep.) to succeed S. W. Brown (Rep.) in the sixth district; T. S. Kyle (Rep.) to succeed W. L. Weaver (Rep.) in the seventh district; W. R. Warnock (Rep.) to succeed A. Lybrand (Rep.) in the eighth district; Emmet Tompkins (Rep.) to succeed J. J. Lentz (Dem.) in the twelfth district; W. W. Skiles (Rep.) to succeed W. S. Kerr (Rep.) in the fourteenth district; J. J. Gill (Rep.) to succeed Lorenzo Danford (Rep.) in the sixteenth district; J. W. Cassingham (Dem.) to succeed John A. McDowell (Dem.) in the seventeenth district, and J. A. Beidler (Rep.) to succeed F. O. Phillips (Rep.) in the twentieth district.

The Legislature in 1900 consisted, in the Senate, of 19 Republicans, 9 Democrats, and 1 Independent Republican, and in the House of 62 Republicans, 45 Democrats, and 3 Independent Republicans. In 1901 the Legislature will consist of 19 Republicans, 10 Democrats, and 1 Independent Republican in the Senate, and 62 Republicans and 48 Democrats in the House.

In the national election McKinley had 543,918 votes, and Bryan had 474,882 votes. In 1896 McKinley had 525,991, and Bryan, 474,497 votes. Thus, McKinley's plurality increased from 47,497 in 1896 to 69,036 in 1900.

State Officers and National Representatives.—State officers for 1900: Executive—governor, G. K. Nash; lieutenant-governor, J. A. Caldwell; secretary of state, Charles Kinney; treasurer, I. B. Cameron; auditor, W. D. Guilbert; commissioner of common schools, L. D. Bonebrake; attorney-general, J. M. Sheets; adjutant-general, H. A. Kingsley; secretary of State Board of Agriculture, W. W. Miller; commissioner of insurance, W. S. Matthews—all Republicans.

Supreme Court: Chief justice, John A. Shauck; associate justices, T. A. Minshall, W. Z. Davis, M. J. Williams, J. F. Burket, and W. T. Spear; clerk, Josiah B. Allen—all Republicans.

State officers for 1901: Executive—same as for 1900, except that L. C. Laylin replaces C. Kinney as secretary of state. G. R. Gyger replaces Kingsley as adjutant-general, and A. T. Verry replaces Matthews as commissioner of insurance.

Supreme Court: Same as for 1900.

Congressional representatives for 1900 (56th Congress): Republicans (15), W. B. Shattuc, J. H. Bromwell, S. W. Brown, W. L. Weaver, A. Lybrand, J. H. Southard, S. Morgan, C. H. Grosvenor, W. S. Kerr, H. C. Van Voorhis, J. J. Gill, R. W. Tayler, Charles Dick, F. O. Phillips, T. E. Burton; Democrats (6), J. L. Brenner, R. B. Gordon, D. Meekison, J. J. Lentz, J. A. Norton, J. A. McDowell.

Congressional representatives for 1901 (57th Congress): Republicans (17), W. B. Shattuc (Cincinnati), J. H. Bromwell (Cincinnati), R. N. Nevins (Dayton), C. Q. Hildebrand (Wilmington), T. S. Kyle (Troy), W. R. Warnock (Urbana), J. H. Southard (Toledo), S. R. Morgan (Oak Hill), C. H. Grosvenor (Athens), E. Tompkins (Columbus), W. W. Skiles (Shelby), H. C. Van Voorhis (Zanesville), J. J. Gill (Steubenville), R. W. Tayler (Lisbon), Charles Dick (Akron), J. A. Beidler (Cleveland), and Theodore E. Burton (Cleveland); Democrats (4), R. B. Gordon (St. Marys), John S. Snook (Paulding), J. W. Cassingham (Coshocton), J. A. Norton (Tiffin).

Senators for 1900 (56th Congress): J. B. Foraker (until 1903), from Cincinnati, and M. A. Hanna (until 1905), from Cleveland—both Republicans.

Senators for 1901 (57th Congress): Same as for 1900.

OIL PAINTERS, SOCIETY OF, a British society of artists, until 1898 called the Institute of Painters in Oil Colors, was founded in 1883. It holds annual exhibitions in November. President, Frank Walton; secretary, S. Melton Fisher. Headquarters, Piccadilly W., London, England.

OKLAHOMA, a southwestern Territory of the United States, has an area, approximately, of 38,830 square miles. The Territory was organized May 2, 1890. The capital is Guthrie.

Mineralogy.—So little mining has been done in the Territory, that the mineral deposits, which are known to be numerous and of great promise for the future, belong rather under the head of undeveloped resources. Copper is being profitably mined in the western extremity of Beaver County, and there is a limited output of coal in Pawnee County and the Osage Reservation. In the latter district excellent indications of zinc and lead are found. Late in the summer of 1900, both oil and natural gas were discovered in wells near Granite, in Greer County. The greatest mineral wealth of the Territory lies in the Comanche Reservation; indications of cobalt, iron, asphalt, zinc, and copper have been discovered in this region. At one point, near Fort Sill, asphaltum oozes from the ground, and liquid beds of it have been penetrated in digging wells. In Woods and Grant counties there are glistening plains of white salt deposits, which extend for miles. Salt Creek, in northern Blaine County, has its source in enormous deposits of rock salt, which, it is estimated, is dissolved and carried away by the stream at the rate of 30 to 50 car-loads a day. There are also great stone, cement, clay, and gypsum deposits in many parts of the Territory. Very little quarrying was done in 1899, the only product reported being limestone, the value of which was \$50,550 for the annual output, four-fifths of the limestone was used for paving and road-making, and one-fifth for building purposes.

Agriculture.—The wheat crop, which is the leading agricultural product of the Territory, amounted in 1900 to 18,657,373 bushels, valued at \$9,888,408. The corn crop was very short, being only 14,144,052 bushels, valued at \$3,677,454. In 1900 there were 107 grain elevators in the Territory, with an aggregate capacity of 1,860,000 bushels. The movement of cotton during the season 1899-1900 was 66,565 bales. Federal officials estimated the area devoted to the cultivation of cotton in the season 1900-01 at 246,000 acres, and the yield at 318 pounds of lint cotton per acre. In 1899 the output of castor beans was about 125,000 bushels, and of peanuts, 40,000 bushels. Other important crops are oats, potatoes, barley, rye, sugar beets, and all kinds of garden vegetables. The principal fruits cultivated are plums, grapes, peaches, and apples. The abundant grape crop of the Territory has given rise to the manufacture of considerable wine in the sections of the Territory where large vineyards have been planted. The live stock assessed in 1900 comprised 243,103 horses, 49,525 mules and asses, 990,534 cattle, 43,474 sheep, and 245,431 swine. The wool crop for 1900 was estimated at 218,916 pounds of washed and unwashed wool, and 76,621 pounds of scoured wool.

Manufactures.—In 1900 there were 42 flouring mills in the Territory, with an aggregate daily capacity of 5825 barrels; about 250 cotton-gins; 6 cotton-seed oil mills; creameries in seven cities; and cheese factories in two; ice and cold storage plants in twelve cities, and foundries and planing-mills in four. Other industries are the manufacture of brooms, canned goods, cement, brick, sashes and doors, harness, and salt. During the calendar year 1899 there were 45 cigar factories in operation, and the annual output was 1,850,362 cigars.

Railways.—During the calendar year 1900 the new construction of railroad aggregated 137.99 miles, giving the Territory a total mileage of 899.25. Railroad property was valued for taxation in 1900 at \$4,011,633.

Banks.—On October 31, 1900, there were 27 national banks in operation, and 3 in liquidation. The capital stock aggregated \$953,200; circulation outstanding, \$473,425; deposits, \$2,972,134; and reserve held, \$1,002,673. The territorial banks, December 31, 1899, numbered 71, and had capital, \$619,100; deposits, \$3,542,224; and resources, \$4,520,055.

Finances.—The total assessed valuation of property in 1900 was \$49,338,661, an increase of \$6,386,247 over 1899. Property is listed for taxation at about one-third of its actual cash value. The tax levy for 1900 was 5.15 mills, as against 5.2 mills in 1899. The bonded debt was incurred for school purposes, and amounted to \$48,000; outstanding warrants (less cash in treasury), \$379,054; interest on warrants, \$27,771; total indebtedness, \$454,825.

Insurance.—In 1900 there were 15 life, 46 fire, and 8 accident or casualty companies authorized to do business in the Territory. The local business of outside fire

companies in 1899 was: Insurance written, \$15,274,519; premiums collected, \$255,425; losses incurred, \$62,026; life insurance, policies issued, \$4,634,227; premiums collected, \$102,397; losses incurred, \$34,743; miscellaneous companies, policies issued, \$1,229,435; premiums collected, \$7748; losses incurred, \$767. Several farmers' mutual companies are in operation under the territorial law allowing 1000 farmers to organize a mutual company for the insurance of grain, live stock, and farm buildings.

Charities and Correction.—During 1899-1900 the number of deaf-mutes in attendance at the institute at Guthrie was 52. There is no institute in the Territory for the blind. Forty-nine blind persons were reported from the various counties. The insane are cared for by contract, and an asylum has been erected at Norman by the contractors, the Oklahoma Sanitarium Company. The cost to the Territory is \$200 per patient per annum. On July 1, 1899, there were 243 inmates of the asylum, and on July 1, 1900, 283. The Territory has no penitentiary of her own as yet, and her convicts are sent to the Kansas State penitentiary at Lansing, Kan., and are there cared for at an expense to Oklahoma of 35 cents per day for each convict. In September, 1900, there were 234 Oklahoma convicts, an increase of 65 over the preceding year.

Education.—In 1899 the school population was 114,736, enrolment, 85,635, and the average daily attendance for the school year ended June 30, 1900, was 49,771. In 1900 there were 2008 organized school districts, 1985 schools, 2191 teachers; receipts for the school year were \$723,497, and expenses, \$502,581, of which \$344,977 was for teachers' salaries. In 1899 the public high schools numbered 4, and had 288 students and 14 teachers; 2 private secondary schools had 55 students and 9 teachers. In addition, the Territory contains the following higher institutions of learning: University of Oklahoma, with 295 students and 22 instructors; agricultural and mechanical college, with 367 students and 20 instructors; territorial normal school, with 322 students and 12 instructors; northwestern normal school, with 413 students and 15 instructors; and Langston University for colored youth, with 187 students enrolled and 7 teachers. The United States government maintains 14 reservation boarding schools and 2 day schools for the Indians of the Territory, the aggregate attendance at which was 1164. There are also a number of sectarian schools supported by various church organizations. In September, 1900, there were 172 periodicals published in the Territory, embracing 9 dailies, 139 weeklies, 18 monthlies, 4 semi-monthlies, and 2 quarterlies.

Population.—The population, according to the United States census of 1890, was 61,834, and according to the census of 1900, 398,331, an increase during the decade of 336,497, or 544.42 per cent. The largest cities are Oklahoma City, with 10,037 inhabitants, and Guthrie, 10,006 inhabitants.

Indians and Indian Reservations.—The Indian population of the Territory, according to the report of Governor C. M. Barnes for 1900, was 12,980, all under the care of five agencies, except 298 Arizona Apaches, who are held at Fort Sill as prisoners of war. On June 6, 1900, an act of Congress was approved ratifying the treaty with the Kiowa, Comanche, and Apache Indians, and providing for the opening of their reservation to settlement within a year from that date. Governor Barnes reports enormous numbers of inquiries from every State and Territory in the Union, and even from foreign countries, into the reservation and the proposed opening, and a brisk rush of immigrants is expected when the reservation is opened in the summer of 1901.

Statehood.—In his annual report for the year ending June 30, 1900, the governor stated that Oklahoma was fully entitled, through her population and resources, to admission as a State. The actual wealth of Oklahoma was said by the governor to be not less than \$135,000,000, and the assessed valuation of taxable wealth for the year 1900 was more than \$49,000,000. The population of the State, which was 61,834 in 1890, had increased by 1900 to nearly 400,000.

Elections.—In 1900 the vote for delegate to Congress resulted in the re-election of Flynn (Rep.), who received 38,253 votes, against Neff (Fus.), who received 33,539. Flynn's plurality was 4714. The governor is Cassius M. Barnes (Rep.), and all other officers of the Territory are Republicans, except Associate Justice John L. McAtee, who is a Gold Democrat. In 1900, the territorial Legislature consisted, in the council, of 8 Republicans, 3 Democrats, and two Fusionists; and in the House, of 17 Republicans, 3 Democrats, 4 Fusionists, and two Populists. In 1901 the territorial Legislature will consist of 5 Republicans, 7 Democrats, and 1 Populist in the council; and of 16 Republicans and 10 Fusionists in the House.

Territorial Officers and Delegates.—Territorial officers for 1900: Executive-governor, Cassius M. Barnes; secretary, William M. Jenkins; treasurer, F. M. Thompson; attorney-general, H. S. Cunningham; superintendent of education and auditor, S. N. Hopkins—all Republicans.

Supreme Court: Chief justice, J. H. Burford; associate justices, C. E. Irwin, B.

F. Burwell, B. T. Hainer, and J. L. McAtee; clerk, B. F. Hegler—all Republicans, except McAtee, who is a Gold Democrat.

Territorial officers for 1901: Executive—same as for 1900, except that J. C. Strong (Rep.) replaces H. S. Cunningham as attorney-general.

Judiciary: Same as for 1900.

Delegate to Congress 1900 (56th Congress): D. F. Flynn (Rep.), from Guthrie.

Delegate to Congress 1901 (57th Congress): Same as for 1900.

ONTARIO, a province of the Dominion of Canada, with an area of 222,000 square miles, excluding the Great Lakes and the St. Lawrence. Its population in 1891 was 2,114,321. The capital of the province is Toronto, with a population estimated in 1900 at 212,560. The administration is in the hands of a lieutenant-governor, appointed by the governor-general, and a responsible ministry. The province has only one chamber (Legislative Assembly), consisting of 94 members elected for four years by universal suffrage. It sends 24 members to the Dominion Senate and 92 to the House of Commons.

Industries and Agriculture.—Mining is the principal industry of the province, and according to the returns for the year ending June 30, 1899, it has advanced considerably since 1898. The total production of pig iron for the fiscal year 1899 was 64,749 net tons, valued at \$808,157, an increase of \$277,368 over the production of the previous year. The production of gold shows a similar increase, the value of the product for 1898-99 being \$420,444, against \$265,888 in the previous year. The output of nickel amounted to 2872 net tons, valued at \$526,104, and the production of silver, 105,467 ounces, an increase of about 20,000 ounces over the product of the preceding year. Ontario has vast oil districts, especially in the county of Lambton, which yields the greater part of the petroleum produced in the Dominion. The total production of minerals, both metallic and non-metallic, during 1899 amounted to \$8,789,901, an increase of about \$1,500,000 over the production of the preceding year. There were 10,000 men employed in the mineral industries, and the total of wages paid out during the year amounted to \$2,930,100. The official returns for the fishery industries during the calendar year 1898 (the last officially reported) also show considerable progress since 1897. The total value of the catch was \$1,433,632, an increase of \$143,810 over that of 1897. The principal catch was trout, \$582,430; whitefish, \$232,762; herring, \$146,640, and pickerel, \$135,767. The total value of the fish exported during 1898-99 was \$440,060, and the amount of fry distributed, 80,750,000. The capital invested in the fishery industries amounted to \$628,778, and the federal revenue was only \$5831, against \$30,574 in the preceding year. The agricultural statistics for 1899 show a considerable decline in the yield of winter wheat, which amounted to 14,439,827 bushels, or 13.8 bushels to the acre in 1899, and 25,158,713 bushels, or 24.0 bushels to the acre in 1898. The yield of spring wheat was 7,041,317 bushels; oats, 89,897,724 bushels; barley, 14,830,891 bushels; potatoes, 19,933,366 bushels; clover and hay, 3,498,705 tons, and tobacco, 2,241,562 pounds. The total value of the farm property of the province in 1899 was given at \$923,022,420, estimating the value of the land at \$556,246,569, buildings at \$210,054,396, implements at \$52,977,232, and live stock at \$103,744,223. In 1898 there were in the province 282 creameries, with a total annual output of 9,008,992 pounds of butter, valued at \$1,632,234.

Commerce and Banks.—The total value of imports for the fiscal year 1899 was \$60,308,057, an increase of more than \$10,000,000 as compared with 1898. Of the total amount of imports, \$40,143,817 came from United States and \$13,413,258 from Great Britain. The amount of duty collected was \$9,460,276. The total value of exports was \$48,137,912, against \$46,786,205 in 1898. The number of commercial failures for the calendar year 1900 was 546, with \$2,882,048 liabilities and \$2,180,685 assets. The merchant marine of the province at the end of 1899 consisted of 952 steamers and 536 sailing vessels, with a net tonnage of 134,234. The number of chartered banks and bank branches at the end of the fiscal year 1899 was 306. The 481 post-office savings banks had 96,184 depositors, and deposits amounting to \$22,064,555. The only government bank of the province had 1467 depositors and \$648,367 deposits. The total amount of clearings passing through the two clearing houses (Toronto and Hamilton) was \$544,868,002, against \$475,127,300 in 1898.

Railways, Telegraphs and Post-offices.—At the end of the fiscal year 1899 the total length of the railway lines of the province was 6798 miles, the largest provincial mileage in the Dominion. The amount of subsidies granted to railways constructed and under construction was \$20,112,337 in 1899. Government telegraph lines, including the Pelee Island system, had a total length of 33.5 miles, of which 9.5 miles were cables. The revenue from the telegraph lines was \$142, and the expenditures, \$165. There were at the end of the fiscal year 1899, 3228 post-offices, in which 77,500,000 letters were posted during the year. The number of money-order offices has increased to 816, with 541,363 orders issued, representing the sum of \$6,717,325.

Instruction and Charities.—The educational system of Ontario comprises kindergartens, public or separate schools, high schools or collegiate institutes, and the university. Education is compulsory between the ages of 7 and 13, and all regulations for the public and the high schools are made by the minister of education, with the approval of the provincial government. The statistics for 1898 give the number of public schools at 5932, with an enrolment of 478,394 and an average daily attendance of 273,451. The teaching staff consisted of 2743 male and 6466 female teachers. There were, besides, 345 Roman Catholic schools, with 41,667 registered pupils and an average daily attendance of 25,671, and 8 Protestant separate schools, with an average attendance of 266. There were also 130 high schools, with 571 teachers and an enrolment of 23,301; 61 county model schools, 10 normal schools, 12 normal colleges, 116 kindergartens, 75 teachers' institutes, and 18 night schools. Besides the institutions enumerated above, there were connected with the Board of Education 6 art schools, with a total attendance of about 700, 247 public and 117 free libraries, with 436,124 and 425,923 volumes respectively. The total receipts for educational purposes were \$5,219,444, made up of government grants, municipal assessments, and clergy reserve fund. The expenditures amounted to \$4,392,714. The number of schools for Indian children was 81, with an enrolment of 2725, and an average attendance of 1589. The charitable institutions of the province consisted in 1898 of 48 general hospitals, 35 houses of refuge, 31 orphan asylums, 7 asylums for the insane, and a few other institutions, containing 36,851 inmates. These institutions are maintained partly by the government and partly by private subscriptions and municipal aid. The total amount received for charitable purposes in 1898 was \$1,666,227, of which the government contributed \$887,997. The expenditures for the same year amounted to \$1,446,551.

Finances.—The revenue of the province for the calendar year 1899 was \$4,096,495. The principal sources of the revenue were the Dominion subsidy, \$1,196,873; woods and forests, \$1,092,849; licenses, \$373,804, and casual revenue, \$257,979. The expenditures for the same year amounted to \$3,710,421. The chief items of expenditure were: Public institutions, \$807,598; education, \$746,002; Department of Justice, \$417,212; civil government, \$253,013, and agriculture, \$222,110. The amount of railway subsidies payable for the next 30 years was, on December 31, 1899, \$1,962,903, and the excess of assets over liabilities, \$2,250,932.

History for 1900.—An important amendment to the Mines act has been introduced by the Hon. E. J. Davis, commissioner of crown lands. Its object is to secure the treatment and refining of ore within the Dominion, and it provides for the abolition of mining royalties, conferring at the same time upon the government the power to substitute instead a tax on the ore, which is to be wholly or partly refunded in case of ores treated in the Dominion. The sum of \$40,000 has been appropriated by the Legislature for the purpose of exploring that part of the province which is known under the name of New Ontario.

ORANGE RIVER COLONY, formerly the Orange Free State, was annexed to the British Empire by formal proclamation on May 28, 1900. The colony is bounded on the north by the Vaal River Colony, formerly the South African Republic, on the east by Natal and Basutoland, on the south by Cape Colony, on the west by Cape Colony, Griqualand and Bechuanaland. It has an estimated area of 48,326 square miles and a population of 207,503, including 129,787 Kaffirs and 77,716 whites. Eighty-five per cent. of the latter are Boers. The capital and largest town is Bloemfontein, with a population of about 5000. About 95 per cent. of the inhabitants belong to the Dutch Reformed Church. Education is provided by the government, which spent in 1898 about \$275,000 for this purpose. In that year there were 199 government schools, with 8157 pupils and 42 private schools, with 753 pupils. About 35 per cent. of the population is illiterate. The country is little adapted to agriculture, and out of 29,000,000 acres less than 1 per cent. is cultivated. Grazing, on the other hand, is excellent, and the chief occupation of the colony is the raising of live stock, especially sheep. Diamonds and coal are the principal minerals, the product of the former in 1898 being valued at \$7,543,000. Gold and garnets are also found. The principal articles imported are cereals, wool, cattle, and horses. The chief exports are diamonds, wool, hides, grain, and ostrich feathers. Almost the entire trade is done with Cape Colony, the Transvaal, and Basutoland. Non-African trade comes in through the ports of Cape Colony and Natal. In 1898 the exports to African territory were valued at £1,923,425, and the imports at £1,190,932. In 1899 and all through 1900 trade was largely interfered with by the war with Great Britain, and the gathering of statistics was, of course, impossible. (See TRANSVAAL.) On January 1, 1899, there were 392 miles of railway in the country owned by the state, and 1900 miles of telegraph lines. Revenue was derived from the railroads, import duties, stamps, posts and telegraphs, transfer dues, native poll-tax, and quit rents; the chief items of expenditure were the railroads, civil list, education, public works, posts and telegraphs, police, and artillery. In 1898 the income

amounted to £799,758, and the expenditures to £956,752. The public debt in 1898 was about £1,830,000. Every man in the state between 16 and 60 is liable to military service in time of necessity. In 1899 the number of burghers available was estimated at 22,000. In the war against Great Britain 20,000 men joined the Transvaal army. Orange River Colony was settled in the first half of the nineteenth century by Boers who, desiring to escape English rule, migrated to Natal and then north of the Orange River. In the convention of February 23, 1854, the independence of the state was acknowledged by Great Britain. In 1899 the state became involved in war with Great Britain through its alliance with the Transvaal. Up to May 28, 1900, the country was a republic, with a president chosen for five years, and a legislative council, or *Volksraad*, chosen by the vote of the adult white male population, for four years, the suffrage being restricted by a property qualification.

For the history of 1900 and the details of the fate of the republic, see TRANSVAAL.

ORE DEPOSITS. During the year 1900 there have appeared important papers on this subject. One of these, by W. H. Weed, deals with the enrichment of mineral veins by later metallic sulphides (*Trans. Amer. Inst. Min. Eng.*, February, 1900). In this work it is shown that in the weathering of the upper portion of the ore deposit the ore becomes oxidized, and is often taken into solution and carried by surface waters to a lower depth, where it is redeposited, causing local enrichment of the vein. It was thought for some time that this enriching of the mineral only took place within the limits of the oxidation zone, or, in other words, above the limit of standing water. This work of Weed, however, shows that the metallic salts dissolved out of the oxidized portion of the ore bed may be carried below this limit and precipitated in the unaltered or unweathered portion of the ore body. Their reprecipitation is due to their coming within reach of reducing influences, such as an upward current containing metallic sulphides.

Another paper is by Van Hise (*Trans. Amer. Inst. Min. Eng.*, February, 1900), and is entitled *Some Principles Controlling the Deposition of Ores*. In this work the author discusses the circulation of water in the upper portions of the earth's crust, and considers that the movement of this liquid depends largely on the physical structure of the rock. Van Hise conceives that the rocks of the crust are divisible into two zones—namely, the outer zone of fracture, in which the rocks may often be full of cracks and fissures, and an inner zone of flowage, in which the rocks are under such great pressure that they flow and render impossible the formation of a cavity. Between these two we may recognize a zone of combined fracture and flowage. The circulation of waters occurs chiefly in the zone of fracture and in the upper portion of the zone of fracture and flowage, consequently there is a limit to the depth at which cavities for the deposit of ores can exist, this depth of course varying with the nature of the rock. Accordingly, Van Hise calculates that cavities cannot exist in soft shale rocks below a depth of 1625 feet, and in granitic rocks below a depth of 32,500 feet. His conclusions are: 1. That the greater part of ore deposits are the result of the work of underground water. 2. That the material for ore deposits is derived from rocks within the zone of fracture. 3. That by far the major part of the water depositing ores is meteoric. 4. That the flowage of underground water is caused chiefly by gravitative stress. While all geologists admit the importance of Van Hise's work, at the same time some of them raise the point that he has not given sufficient attention to circulating solutions coming from the lower depths of the earth's crust and set in movement by the intrusion of igneous rocks. A third important work is by W. Lindgren, and is entitled *Metasomatic Processes in Fissure Veins* (*Trans. Amer. Inst. Min. Eng.*, 1900). The term *metasomatism* is one used to describe many processes connected with the formation of mineral veins which involve the replacement of minerals of the wall rock by ore or gangue. Mr. Lindgren describes these processes in detail, and shows that they are much more widespread than has hitherto been imagined. The number of minerals, he says, which are developed by metasomatic processes in fissure veins is very great, and he uses the processes and the minerals thus formed as a basis for the classification of fissure veins. Fourteen types are identified by him, and he states that the process of metasomatism has occurred chiefly in those fissure veins which do not show a banded structure. A fourth work which is being published in the form of a series of papers by J. H. L. Vogt, in the *Zeitschrift für praktische Geologie*, deals with the igneous origin of certain ore bodies, especially those containing magnetite and some other basic minerals. Professor Vogt considered that most titaniferous magnetites, as well as some chromite and pyrrhotite bodies, are the result of a segregational or collecting process which has taken place during the cooling of the igneous rocks in which these ores are found. This is a theory which was expressed by some geologists many years ago, but its importance has not been generally recognized until recently.

OREGON, a Pacific coast State of the United States, has an area of 96,030

square miles. The capital is Salem. Oregon was organized as a Territory, August 14, 1848, and admitted as a State, February 14, 1859.

Mineralogy.—The estimated production and value of the precious metals for 1900 was: Gold, 83,000 fine ounces, \$1,715,762; silver, 150,000 fine ounces, \$91,500. With an output of 86,888 short tons of coal, valued at \$260,917, the State produced 28,704 tons more than in the preceding year, but did not attain the figures reported for 1896 or 1897. Quarrying in 1899 yielded limestone, sandstone, and granite, the total production of which was valued at \$15,165.

Agriculture.—The principal crops, with the production and value for the calendar year 1900, were: Wheat, 16,198,012 bushels, \$8,908,907; oats, 3,282,770 bushels, \$1,345,936; barley, 905,928 bushels, \$380,490; corn, 317,147 bushels, \$180,774; rye, 94,040 bushels, \$57,364; potatoes, 1,692,020 bushels, \$761,409, and hay, 1,677,085 tons, \$11,404,178. The area in commercial apple orchards is stated to be about 16,500 acres, valued at \$16,500,000. The *Bulletin* of the National Association of Wool Manufacturers gives the following estimate of the wool clip for 1900: Number of sheep, 2,351,274; wool, washed and unwashed, 18,810,192 pounds; scoured wool, 5,643,058 pounds. Returns from the tax assessors for 1899 give the number and value of live stock in the State for that year as follows: Horses and mules, 162,802, \$2,478,774; cattle, 379,450, \$4,823,782; sheep and goats, 1,559,839, \$2,227,563, and swine, 80,234, \$168,486.

Industries.—In 1899 the lumber product was 669,650,000 feet, valued at \$6,228,250. During the two years ending December 31, 1900, 679 corporations were organized under the laws of the State for the purpose of engaging in various business enterprises, as follows: Banks, 11; creameries, 13; canning and packing companies, 24; drug companies, 14; irrigating companies, 54; land and investment companies, 43; light, water, heat, and power companies, 27; lumber companies, 35; manufacturing companies, 31; mercantile companies, 67; mining companies, 245; newspaper companies, 10; railroad companies, 18; miscellaneous companies, 87; the capital stock of all of which aggregated \$127,283,450. In 1899 there were 151 commercial and business failures, or 1.90 per cent. of the 7934 business concerns in the State; and in 1900, 138 failures, or 1.66 per cent. of the 8332 business concerns in operation that year. Though the latter year shows a decrease in both the number and the percentage of failures, comparison with the records of other States indicates that the percentage of failures in Oregon was unusually high.

Commerce.—The imports of merchandise in the districts of Willamette and Oregon during the fiscal year ending June 30, 1900, aggregated in value \$1,810,987, an increase in a year of \$288,890; and the exports, \$8,344,144, a decrease of \$772,829; total foreign trade, \$10,155,131.

Railways.—The new railway construction reported for the calendar year 1900 amounted to 57 miles, giving the State a total mileage of 1695.78. Railroad property valuations for 1899 were: Railroad bed, \$5,340,460; rolling stock, \$697,540; total, \$6,038,000.

Banks.—On October 31, 1900, there were 26 national banks in operation and 16 in liquidation, and the capital stock aggregated \$2,370,000; circulation outstanding, \$1,070,434; deposits, \$13,055,467, and reserve held, \$3,817,969. The State banks June 30, 1900, numbered 19, and had capital, \$614,450; deposits, \$3,301,580, and resources, \$4,505,182; and private banks, 2, with capital, \$87,000; deposits, \$87,061, and resources, \$184,450. During the fiscal year ending September 30, 1900, the exchanges at the clearing house at Portland aggregated \$102,047,454, an increase over the preceding year of \$11,257,307.

Finances.—The total assessed valuation of property as equalized for 1900 was \$120,282,879, a decrease from the preceding year of \$13,250,698. The secretary of state declares in his biennial report that this decrease is due to the lax performance of duties by assessing officers, and that the assessed valuation of property has been reduced to probably 30 per cent. of its true valuation, although the constitution requires that all property shall be assessed at its true cash value. The tax levy is 6.3 mills. The total receipts at the State treasury for the two years ending December 31, 1900, were \$4,572,452; expenditures, \$3,627,829; balance January 1, 1901, \$944,624.

Education.—The school census of 1899 shows a total enumeration of 132,408 persons between the ages of 6 and 21. The enrolment in the public schools was 88,485, and the average daily attendance, 61,234. There were 2060 buildings used as schoolhouses, and the estimated value of all public school property was \$2,871,718. The total school revenue was \$1,270,568, and expenditures, \$1,159,125, of which \$826,385 was for teachers' and superintendents' salaries. The average expenditure per pupil for the whole school year was \$18.93. There were 15 public high schools, with 54 teachers and 1777 secondary students; 19 private secondary schools, with 87 teachers and 928 secondary students; and 4 public normal schools, with 31 teachers and 561 students in normal courses. Nine colleges and universities for men and

for both sexes reported 110 professors and instructors, 1155 students in all departments, and a total income of \$91,475; and 1 school of technology reported 34 professors and instructors, 338 collegiate and graduate students, and a total income of \$88,386. The professional schools comprised 3 theological schools, with 12 instructors and 58 students; 2 law schools, with 4 instructors and 51 students, and 2 medical schools, with 39 instructors and 84 students.

Population.—According to the United States census, the population in 1890 was 313,767; in 1900, 413,536; increase for the decade, 99,769, or 31.8 per cent. The largest city is Portland, with 90,426 inhabitants.

Constitutional Amendments.—Four constitutional amendments were rejected by the Oregon electors at the State elections held in June. The rejected amendments were as follows:

1. That women, equally with men, should be allowed to vote.
2. That the county, municipal, and school district debt should not exceed 5 per cent. of the value of taxable property.
3. That the number of the judges of the Supreme Court should be increased from three to five.

4. That a more strict supervision should be kept over reservoirs and water rights.

Elections.—At the State elections in 1898 Geer (Rep.) received 45,093 votes, and King, the candidate of the Fusionists, received 34,542 votes. Geer's plurality was 10,551. In 1900 C. F. Wolverton (Rep.) was elected justice of the Supreme Court. All the State officers are Republicans. The Republican representatives to the 56th Congress, T. H. Tongue and Malcolm Moody, were both returned to the 57th Congress. The State Legislature in 1900 consisted, in the Senate, of 23 Republicans, 3 Democrats, and 3 Populists; and in the House of 42 Republicans, 6 Democrats, 5 Fusionists, 3 Populists, and 4 Silver Republicans. In 1901 the State Legislature will consist, in the Senate, of 20 Republicans, 1 Democrat, 4 Citizens, 1 Union, and 4 Fusionists; and in the House of 36 Republicans, 2 Democrats, 13 Citizens, 3 Union, and 6 Fusionists.

In the national election McKinley received 46,526 votes, and Bryan received 33,385 votes. In 1896 McKinley received 48,779, and Bryan received 46,663. Thus, McKinley gained in plurality from 2117 in 1896 to 13,141 in 1900.

State Officers and National Representatives.—State officers for 1900: Executive—governor, T. T. Geer; secretary of state and auditor, F. I. Dunbar; state treasurer, C. S. Moore; superintendent of public instruction, J. H. Ackerman; adjutant-general, C. U. Gantenbein; attorney-general, D. R. N. Blackburn—all Republicans.

Supreme Court: Chief justice, C. E. Wolverton; associate justices, Robert S. Bean and Frank A. Moore; clerk, J. J. Murphy—all Republicans.

State officers for 1901: Executive—same as for 1900.

Supreme Court: Chief justice, Robert S. Bean; associate justices, C. F. Wolverton and F. A. Moore; clerk, J. J. Murphy—all Republicans.

Congressional representatives for 1900 (56th Congress): Thomas H. Tongue (Hillsboro) and M. A. Moody (The Dalles)—both Republicans.

Congressional representatives for 1901 (57th Congress): Same as for 1900.

Senators for 1900 (56th Congress): George W. McBride (until 1901) and Jos. Simon (until 1903)—both Republicans.

Senators for 1901 (57th Congress): Jos. Simon (until 1903), from Portland; other vacant.

ORGANIC CHEMISTRY. See **CHEMISTRY.**

ORIENTAL SOCIETY, AMERICAN, founded in 1842 for the study of Oriental languages, had in 1900 a membership of 380. General meeting for 1901 at New York, in April. The society publishes semiannually the *American Oriental Journal*. President, D. C. Gilman; secretary, Washburn Hopkins, 235 Bishop Street, New Haven, Conn.

ORNITHOLOGY. The past year has been a busy one to ornithologists, for though no remarkably interesting discoveries were made, an unusual amount of literature has appeared, covering every possible phase of the subject. The year has been notable for the great increase in public interest in bird protection, especially in the United States. This has been shown not only in the enforcement of existing laws, but also in the passing of additional and more stringent legislation. This was especially shown in the passage of the Lacey bill by Congress in May, 1900. This bill places the preservation, distribution, introduction, and restoration of game and other birds under the control of the Department of Agriculture, regulates the importation of foreign animals, and prohibits interstate traffic in birds or game killed contrary to State law. The work of bird protection as carried on by various organizations has been unusually successful, and is referred to briefly below. Two questions connected with the physiology and habits of birds have been discussed quite a little during the year: In England there has been discussion as to the cause

of the so-called "racket feathers" in the tails of certain tropical birds; in America there has been some sharp discussion of the question whether feathers, after being fully matured, can receive any new supplies of pigment; or, in other words, whether adult birds can change color without moulting, by change in the color of the feather itself. Regarding "racket feathers," some ornithologists hold that the peculiar shape is due to the inherited effect of mechanical attrition of the vane, while others maintain that even if such a character is inheritable, there are too many cases where such attrition on exposed feathers does not take place to make the theory plausible. As to change of color in a dried feather, most ornithologists, and especially those who have given the subject the longest and most patient study, agree that it is impossible, and that change in color occurs in mature birds only by moult or attrition. Two or three minor events are worthy of note. Two eggs of the great auk were sold at auction in London in June, one for \$900 and the other for \$1575. The latter is the record price, and the egg for which it was paid is said to be the finest specimen known of its special type of marking. A very interesting event is the discovery of a third specimen, a skeleton in the Zoological Museum, Florence, Italy, of the extinct lesser emu (*Dromæus ater*). There are two specimens, a mounted skin and a skeleton in Paris. This third specimen was brought to Paris with the others, but trace of it was subsequently lost, and its recent discovery is, therefore, of importance. The lesser emu originally inhabited Kangaroo Island, south of Australia, but was promptly exterminated by the first settlers. The awarding of the gold medal of the Linnæan Society of London to Professor Alfred Newton, the well-known English ornithologist, is an event of sufficient importance to warrant its mention.

Organizations.—The third International Ornithological Congress was held at Paris the last week in June in connection with the Exposition. It included five sections, each of which was subdivided again, so that every conceivable branch of ornithology might be presented. The German Ornithological Society held its annual meeting at Leipzig in October, celebrating the fiftieth anniversary of the founding of the society. Delegates were present from the ornithological organizations of other countries, and the meetings were both a scientific and social success. In America the principal ornithological organizations, the American Ornithologists' Union and the Audubon Societies, have enjoyed a very successful year. The latter held a "conference of delegates" at Cambridge in connection with the annual meeting of the Ornithologists' Union, which brought out the fact that the lines of usefulness of the Audubon Societies are not emotional and sentimental, but are eminently practical, and their educational work is of the highest value. It was urged that classes for bird study be organized as a means of awakening interest in bird protection. A committee was appointed to formulate plans for the federation of the Audubon Societies, and another conference will be held in New York in November of 1901. The American Ornithologists' Union has flourished, and the annual meeting at Cambridge, Mass., in November was a great success. The membership list shows a slight increase over the preceding year, and is now 748, of which 621 are associate. The delivery of the memorial addresses by Professor D. G. Elliot on Dr. Elliott Coues, and Dr. J. A. Allen on Hon. George B. Sennett, late active members of the union, were the features of the first day's session. Miss Juliette Owen, of St. Joseph, Mo., again donated \$100 to the permanent funds of the union. Besides the reports of the committees, there were twenty-one papers on the programme, more than half dealing with the habits of birds. A paper on *Dooryard Ornithology*, by Judge J. N. Clark, of Saybrook, Conn., showed how much can be learned of birds in a very limited area, for in his own yard he has noted the occurrence of more than one hundred species of birds. Another interesting paper, on the *Natural History of the Alaskan Coast*, was given by Dr. C. Hart Merriam. Mr. Witmer Stone presented a very valuable historical sketch, entitled *The American Ornithologists' Union of 1840-45*, which showed clearly the discomforts and disadvantages which confronted scientific workers at the middle of the century. The most important business transacted was the proposed change in the bylaws, whereby the present class of active members shall be known as *fellows*, and the numerical limit be raised from fifty to seventy-five; the constitution of a new class of members, also limited to seventy-five, to be elected from the present list of associate members, and known as *members*; the name of the present associate members to be changed to *associates*. There seems to be little doubt that these changes will be adopted at the next congress of the union, which will be held in New York City in November. The matter of bird protection received a great deal of attention, very full reports being made by Messrs. Stone and Dutcher, of the committee on that subject. Much was accomplished during the year in the enforcement of laws and the arousing of public sentiment. A special appeal was made in March for funds to enable the committee to protect gulls and terns along the coast, on the ground that such birds are not only attractive and beautiful, but a public necessity as scavengers, especially in such places as New York Harbor. About \$1400 was raised, which was used in the employ-

ment of wardens to protect the birds on their breeding-grounds, and the results are very satisfactory.

Literature.—The literature of the year has been great in quantity and of a high order of merit. The American periodicals seem to have enjoyed a prosperous year. The *Auk* has kept up its high standard, and has somewhat increased in size. The plates published with each number are an attractive feature, and are always first-class. The magazine is indispensable to any one interested in ornithology. *Bird Lore*, the official organ of the Audubon Societies, has evidently struck a popular chord, for it has more than filled the promises made for it, and enters on its third year with the brightest prospects. It is to be increased in size; its quality was already all that could be desired. The organ of the Cooper Ornithological Club of California, the *Condor*, has passed through its second year creditably, and furnishes the Pacific coast with a progressive ornithological journal. Literature relating to the American avifauna has not been as abundant as usual, and there is a notable lack of popular books, the preceding year having apparently supplied the demand. The only books of the year in this class are Chapman's *Bird Studies with a Camera*, a volume of 218 pages, and Dugmore's *Bird Homes*, an interesting attempt to study and classify the nests of birds with the aid of a camera, a volume of 183 pages with 40 plates; Beyer's *Avifauna of Louisiana* and Grinnell's *Birds of the Kotzebue Sound Region* are local lists of more than usual importance. The former is a pamphlet of 45 pages, and is the first list of the birds of that State yet published. The latter is a paper of some 80 pages and a map, noteworthy for the very interesting observations made on 113 birds seen in that arctic region. It is the first of a series of papers to be published by the Cooper Ornithological Club on the Pacific coast avifauna. Macoun's *Catalogue of Canadian Birds*, of which Part I., a volume of 225 pages, has appeared, gives promise of being the most important work ever published on the birds of the northern half of this continent. It is issued by the Geological Survey of Canada. A somewhat technical paper, but one of the deepest interest to all ornithologists, is Dwight's *Sequence of Plumages and Moults of the Passerine Birds of New York*, a volume of nearly 300 pages, illustrated with 7 plates. Dr. Dwight gives no comfort to believers in the theory that birds change the color of their plumages by pigment deposit in matured feathers. In England a number of notable books have appeared, some of them, perhaps, rather local in their scope, but, nevertheless, of general interest. Among these we may mention Miss Fulcher's *Among the Birds* and two books by Mr. C. Dixon, *Among the Birds in Northern Shires* and *The Story of the Birds*. The latter is a volume of over 300 pages, devoted to an account of the history, anatomy, physiology, and habits of birds. Somewhat similar in scope is Pycraft's *The Study of Bird Life*, a useful handbook for students of ornithology. Ussher and Warren's *Birds of Ireland* is a very creditable volume of 450 pages with good accounts of the birds of that island. A list that will attract attention because of its authors and associations is Collett and Nansen's account of the *Birds: Norwegian North Polar Expedition*, a paper of 54 pages, illustrated with 2 plates, 1 of which is colored. It is worth noting that between 84° and 85° north latitude 10 species of birds were seen, the fulmar petrel being seen farthest north. The most interesting birds seen were the roseate gulls, the colored plate showing one of these in its first plumage. Two noteworthy books on the ornithology of Africa have been published during the year, both by men connected with the British army. One is the first volume of a work on the *Fauna of South Africa*, edited by W. L. Sclater, and deals with about one-half of the Passerine birds. It is by the late Dr. A. C. Stark, who was killed November 19, 1899, during the siege of Ladysmith. Fortunately, the manuscript of the second volume is said to be practically complete. The present work is a beautifully printed volume of 350 pages, and will prove a very useful manual, as far as it goes. Captain Shelley's *Birds of Africa* is a work of wider scope, including all the birds found in Africa, Madagascar, and the neighboring islands south of the tropic of Cancer. The first volume appeared in 1896, and during 1900 the second volume has been published in two parts. This volume contains 350 pages and 14 plates, and deals with 169 species. No definite number of volumes of this magnificent work is planned, but it is hoped to bring out a volume annually until the entire avifauna of the region has been described. Two general systematic works deserve mention, Sharpe's *Hand List of the Genera and Species of Birds* and Dubois's *Synopsis Avium*. The first volume of both of these works was published in 1899, but during the past year additional parts have appeared. Volume II. of the *Hand List* is devoted to the *Psittaci* and *Picaria* and includes 2861 species. Three fascicules of the *Synopsis*, containing over 200 pages, illustrated with 5 plates, have appeared, dealing with about 3000 species of *Picaria* and *Passeres*.

OSBORN, HENRY FAIRFIELD, professor of zoology in Columbia University, and curator of vertebrate paleontology in the American Museum of Natural History, New York, was elected a member of the National Academy of Sciences at its annual meeting in 1900. During the year Professor Osborn was appointed vertebrate

paleontologist to the Geological Survey of Canada and paleontologist to the United States Geological Survey. He was born in Connecticut in 1857, and was educated at Princeton, where he graduated in 1877. He remained at Princeton and became a member of the teaching staff, at the same time carrying on extensive researches, both in the laboratory and in the field. After serving as professor at Princeton for a number of years, in 1891 he received a call from Columbia to become the head of the newly established Da Costa department of biology. He was also made dean of the faculty of pure science when it was organized in 1890, and retained this position until 1895. In 1894 Professor Osborn was elected vice-president of the New York Academy of Sciences, and in 1898 he became president, holding the position until 1900. He has also been active in the organization of the New York Zoological Society, and for a number of years was chairman of its executive committee, taking an active part in planning the zoological garden in Bronx Park. Professor Osborn has been an extensive contributor to the literature of paleontology, biology, psychology, neurology, embryology, and education. He is the author of *From the Greeks to Darwin*, published in 1894, and being the first volume of the Columbia University biological series.

OSMAN DIGMA. See EGYPT (paragraph Egyptian Soudan).

OSMAN NURI PASHA GHAZI, the famous defender of Plevna, died February 4, 1900, at Constantinople. Accounts as to the place and time of his birth differ, some placing the time in 1832 and others in 1837, and the place either Tokat or Amasia, in Asia Minor. His education was purely Turkish, he having little knowledge of foreign tongues or modern science and culture such as more recent Turkish officers have acquired. Having entered the military academy at Constantinople in 1850, he engaged in the campaign in Syria ten years later, when England and France compelled the Porte to stay the outrages of the Druses and to make certain concessions to the Maronite Christians. He distinguished himself in the Cretan War in 1867, gained promotion, and later took part in campaigns in Servia and Yemen. When the Russo-Turkish War broke out in 1877 he was a full general, and was regarded as one of the most formidable commanders in Turkey. When the Russians crossed the Danube in July, 1877, they were opposed by Osman, who commanded the flower of the Turkish army, which he intrenched on the hills about Plevna. The defence was well planned by the well-trained engineer Tewfik Pasha, and his skill, together with the determination of Osman, enabled the sixty thousand Turks to hold at bay for nearly five months the large army of the Russians and Roumanians. The besiegers were repeatedly repulsed with great loss, but on December 10 Osman was compelled by famine to capitulate. The remarkable military skill of the man was especially evident when his army was on the defensive, but it must be said that in offensive warfare his ability as a leader was less prominent. As an instance of this the fact may be cited that before his army was shut up in Plevna by assuming the offensive he might have obtained a much stronger position at Orkhanie. After the Russian War he became commander-in-chief of the imperial guard at Constantinople, was made governor-general of Crete, and in 1870-80 and 1881-84 was minister of war. Though a brave and capable leader, Osman was a typical Turk, showing cruelty in the field and allowing corruption and various other abuses to invade his department when he was minister of war. He received from the sultan much wealth and many honors, and was made grand marshal of the palace.

OTIS, ELWELL STEPHEN, brigadier-general United States Army, commanding the Department of the Pacific, sailed from Manila, P. I., on May 5, 1900, arriving at San Francisco on the twenty-fifth of that month. He came on leave of absence, granted at the wish of the Administration, which urged that, by reason of protracted severe labors in an unfavorable climate he deserved and needed, a season of rest. It was at the time understood that he would return to his post in October following, but his successor, General MacArthur, has since been retained in command. His second report, covering operations from September 1, 1899, to May 5, 1900, is regarded as one of the most able and exhaustive papers ever filed in the War Department archives. From his alma mater, Rochester University, he received the degree of Doctor of Laws; and on June 15 he was entertained at a celebration held in his honor by the city of Rochester. He has since been promoted to be major-general United States Army, to succeed General Wesley Merritt, retired, and is now in command of the Department of the Lakes, with headquarters at Chicago, Ill. He will be retired from active service on March 25, 1902.

OTIS, FESSENDEN NOTT, A.M., M.D., a physician and surgeon of wide reputation, died in New Orleans, May 24, 1900. Born at Ballston Spa, N. Y., May 6, 1825, he was educated at Union College, Schenectady, and the New York Medical College, graduating at the latter in 1852. During the following year he was assistant physician at Blackwell's Island Hospital, New York, and then until 1860 was surgeon to the United States Mail Steamship Company. In 1861 he served as surgeon to the New

York Police Department, and from 1862 to 1871 was lecturer on genito-urinary diseases at the College of Physicians and Surgeons, New York. He then became a clinical professor at this institution, retaining his position until 1890. In 1869-73 he was superintending surgeon to the Pacific Mail Steamship Company, and in 1870-72 was president of the medical board of the Police Department. He acted as consulting surgeon to several New York hospitals. Besides numerous monographs on medical subjects, he wrote the following works: *Lessons in Drawing, Studies of Animals and Landscapes*, two vols. (1849-50); *Tropical Journeys* (1856); *History of the Panama Railroad and its Commercial Connections* (1860); *Stricture of the Male Urethra; Physiology of Syphilitic Infection; Clinical Lessons on Syphilis*. Dr. Otis invented a number of surgical instruments.

OTTAWA FIRE. See CANADA (paragraph Ottawa Fire).

OTTENDORFER, OSWALD, an American journalist and the proprietor of the *New Yorker Staats-Zeitung*, died December 15, 1900. He was born in Moravia in 1826, and studied jurisprudence at Vienna and Prague. At the University of Vienna he was involved in the movement of the students in 1848 to overthrow the Metternich government, and afterward took part in the popular revolution in Saxony and Baden. To escape punishment, he came to America in 1850 with that group of Germans of whom Carl Schurz is the best known. Starting in the counting-room of the *New Yorker Staats-Zeitung*, Ottendorfer finally acquired control of the paper. At first the journal represented the Democratic principles of the editor, but at the close of the Civil War Ottendorfer withdrew from that party, and his paper henceforth took an independent stand in politics. He was a member of the famous committee of seventy which strove to improve the municipal government and the political conditions after the downfall of the Tweed régime; Mr. Ottendorfer was an alderman in 1872 and unsuccessful candidate for the mayoralty in 1874. He was a staunch supporter of Cleveland, and was one of the Presidential electors of the Democratic party for the State of New York in 1892. His anti-imperialistic principles led Ottendorfer at first to favor Bryan in the last campaign, but fear of the free-silver policy of the platform finally caused him to support McKinley. The *Staats-Zeitung* continued to reflect Mr. Ottendorfer's views, though some years previous to his death ill health forced him to retire from active newspaper work. Mr. Ottendorfer was a man of great liberality; he built and endowed an educational institution at Zwittau, his native town, and gave to New York the Ottendorfer Free Library. In his will he bequeathed \$200,000 to educational and charitable institutions and \$50,000 to the *Staats-Zeitung* employees.

OYSTER CULTURE. See FISH AND FISHERIES (paragraph United States Fish Commission).

OYSTER FISHERIES. See FISH AND FISHERIES.

OZOKERITE. A report on the Ozokerite industry of Galicia has recently appeared from the office of the Austrian minister of agriculture, and states that about 8000 tons of the substance are mined annually. After mining the ozokerite it is sorted and melted in open boilers and freed from water. It is then cast into molds, and the cakes thus produced are ready for market. Six or more different sorts are recognized, and are obtained from the raw material, which occurs in a hard marl. Much ozokerite is also distributed through this latter substance in a finely divided form, and is abstracted by a special process, which gives a product of special quality.

PEDIATRIC SOCIETY, AMERICAN, organized in 1888; in 1899 had 54 members. President, William D. Booker, M.D., Maryland; secretary, Samuel S. Adams, M.D., 1 Dupont Circle, Washington, D. C. General meeting for 1901, Niagara Falls, first week in June.

PAINTING. *Europe.*—The thirty-first exhibition of works by old masters, or deceased masters, of the British school, opened at the Royal Academy, London, in January and closed in March. It consisted of works by Van Dyck. The one hundred and thirty-second annual exhibition of the Royal Academy was held from May 7 to August 6. There were 2057 numbers in the catalogue, which included, in addition to oil and water color paintings and sculpture, architectural designs and etchings. There were purchased by means of the Chantry Bequest Fund "The Two Crowns," by Frank Dicksee, and "Winter's Sleep," by H. W. Adams. John Belcher, Alfred Drury, Joseph Farquharson, and Henry S. Tuke were elected associates. An exhibition of works by old masters of the Flemish and British schools was held at the New Gallery in January. Two exhibitions of the works of George Romney were held during the year at the Grafton galleries. At the Dudley Gallery two water-color displays were held, and one-fifth of the drawings shown were sold. Other London exhibitions were: Royal Society of Painters in Water Color, Royal Institute of Painters in Water Color, Society of Oil Painters, Royal Society of British Artists, Society of Portrait Painters, the New English Art Club, Society of Women Artists,

Society of Miniature Painters, Society of Miniaturists, and "one-man shows" as follows: C. N. Kennedy and Lynwood Palmer, at Carleton galleries; Munkacsy, Miss Daintrey, Hugh Thomson, W. H. Borrow, F. C. Gould, David Green, Charles Sain-ton and H. Caffiere, at Continental Gallery; Harry Goodwin and Nico W. Jungmann, at Dowdeswell galleries; Moffat Lindner, at Dunthorne's Gallery; Mr. and Mrs. Adrian Stokes, Mrs. Stanhope Forbes, Sir John Tenniel, Charles M. Horsfall, Turner, M. and E. Detmold, Austen Brown, Arthur Hughes, Mrs. Sutro, Herbert Schmalz, Albert Goodwin, and Arthur Hopkins, at the Fine Art Society; Monticelli, Henry Muhrman, Frank Mura, Bertram Priestman, and W. Mouncey, at Goupil Gallery; Rosa Bonheur (300 works), at Hanover Gallery. The "Landscape Exhibition" included work by Peppercorn, Allan, Hill, Leslie Thomson, E. A. Waterlow, and Aumonier, and in August there was a loan exhibition at the People's Palace.

Picture sales in England were much affected by the South African War. The most important was that of the Bloomfield Moore collection, which netted £22,554; two examples of Van Dyck, at the Peel sale, brought £24,254; Sir Joshua Reynolds, 4 portraits at Arundle Castle sale, £11,000; Romney, "Charlotte Peirse," June 16, £7000; Hobbema, "View of Watermill," June 16, £6200; Sir John Millais, "Boyhood of Raleigh," Reiss sale, £5200 (presented by Lady Tate to the Tate Gallery); same sale, Sir F. Leighton, "Helios and Rhodos," £2750; same sale, Rembrandt, "Stone Bridge," £2200; at the Bloomfield Moore sale a Troyon, "Pastoral Landscape," brought £2550, and a Millais, "Cuckoo," £1550. Other important sales amounted to: G. W. Moss, £13,383; James Reiss, £15,689, and Gregory heirlooms, £10,339, at Christie's. Nearly £10,000 was realized by the sale of pictures contributed for the Artists' War Fund. At the Paris Exposition medals of honor were awarded to Sir L. Alma Tadema and W. Q. Orchardson; gold medals to G. Clausen, Stanhope A. Forbes, E. J. Gregory, J. H. Lorimer, Sir George Reid, and J. M. Swan. In 1900 the English nation came into full possession of the great Wallace collection, placed in Hertford House. By the will of the late Henry Vaughan, the National Gallery received work by Raphael, Constable, Stothard, Landseer, Reynolds, and Turner. Two Constables went to the Victoria and Albert Museum, and the Turners to the Irish and Scotch National Galleries. The Victoria and Albert Museum received 27 pictures from James Orrock, and works by old and modern masters from Constantine Ionides. Private subscribers presented Burne-Jones's "King Cophetua and the Beggar Maid" to the National Gallery.

The Société Internationale de Peinture et Sculpture held its seventeenth annual exhibition at Georges Petit's gallery in Paris, Whistler, Besnard, Meunier, Alexander Harrison, and Humphreys Johnston being among the contributors. In Brussels, in February, there was an exhibition at the Cercle Artistique of pictures by H. Huklenbrok and the late H. Evenepoel. The Belgian Society of Water Colorists celebrated its fortieth anniversary with an exhibition at the museum. The Hessian Art Exhibition was held at Darmstadt. The Royal Society for the Encouragement of the Fine Arts held its thirty-seventh annual exhibition at Ghent. There was a display in Milan of pictures by the late Giovanni Segantini. "La Demi-Douzaine" in Paris held an exhibition in Rue Caumartin, where later Fernand Le Gout-Gérard showed sixty-six pictures. The Libre Esthétique Salon at the Musée de Bruxelles contained works by John Sargent, Gustave Moreau, Fantin-Latour, and many of the Glasgow school. At Leipzig there was a display of German art, including work by Bantzer, Baum, Bendrat, Fiedler, Kuehl, Reutsch, Ritter, Sterl, Stremel, and Zwintscher. In 1900 was held the Triennial Brussels Salon at the Palais du Cinquantenaire. The annual exhibition in Paris was embodied in the Exposition, and the display was most comprehensive. The Grand Prix for painting was awarded as follows: Benjamin Constant, Cazin, Dagnan-Bouveret, Harpignies, Hebert, Henner, Henri Martin, Morot, Roll, Vollon, France; Lenbach, Germany; Klimt, Austria; Stevens, Struys, Belgium; Kroyer, Denmark; Sorolla, Spain; Sargent, Whistler, United States; Alma Tadema, Orchardson, Great Britain; Boldini, Italy; Thaulow, Norway; J. Israels, Netherlands; Serov, Russia; Zorn, Sweden; Benczur, Hungary.

Sales at Hotel Drouot, Paris, included: Carrière, "Child and Dog," 13,000 francs; Sisley, "On the Loing," 11,600 francs; drawings by Albrecht Dürer, "Portrait of Jacob Muffel," 36,000 francs; portrait, "Bilibad Perkeimer," same, 17,500 francs; "Young Apostle," 12,500 francs; Fragonard, "The Sleeping Watch," 17,500 francs; Watteau, portrait, "Angelo Constantine," 16,100 francs; Da Vinci, "Study of Drapery," 12,500 francs; Dürer, man's portrait, 18,000 francs; Murillo, "Young Shepherd," 29,500 francs. At Georges Petit Gallery, Decamps's "Children Afraid of Dog," 101,000 francs; same, "Dog Kennel," 35,000 francs; Ziem, "Venice, Grand Canal," 29,700 francs; Corot, "Fisherman," 44,500 francs; Daubigny, "Pasture at the River," 20,200 francs; Fromentin, "The Chase," 23,000 francs; Moreau, "Jacob and the Angel," 53,000 francs; Troyon, "Oak Pond," 23,500 francs; same, "Cattle at Watering-place," 24,000 francs; Van Marcke, "Cattle," 39,500 francs. At Brussels there was a sale of old masters in May; Memline, "Last Judgment," brought 50,000

francs; Van der Weyden, "Mater Dolorosa," 15,000 francs, and "Ecce Homo," 16,000 francs and Ysebrandt, "Christ Between the Two Thieves," 15,000 francs. In Paris, Corot, "The Pond," 18,500 francs and "At the Pool," 16,900 francs. Sale of Rosa Bonheur's atelier, May 30 to June 2, over 2000 pictures and sketches were sold. Best prices were: "Lion Resting," 15,100 francs; "Head of Lion," 11,300 francs; "In the Forest," 20,200 francs, and "Paris Horse Market," 13,000 francs.

United States.—Pending the erection of its new building, the National Academy of Design found itself homeless, and was obliged to seek the galleries of the American Fine Arts Society in which to hold its seventy-fifth annual exhibition from January 1 to 27. Three hundred works were hung. Charles Schreyvogel was awarded the Clarke prize; the three Halgarten prizes went respectively to L. P. Dessar, E. Irving Couse and Granville Smith. Phoebe A. Bunker took the Dodge (woman's) prize. During the year Frank Fowler was elected an Academician, and the following were made associates: William M. J. Rice, William H. Hyde, Frederick W. Kost, Carleton Chapman, Daniel C. French, Kenyon Cox, Alfred Q. Collins, Frank Vincent DuMond and Samuel Isham.

The Pennsylvania Academy of Fine Arts held its sixty-ninth annual exhibition at its building in Philadelphia, from January 15 to February 24. The display was about the most important American exhibition of the year, and on this occasion there were seven hundred numbers in the catalogue, most of the works being in oil. Among the contributors from the American contingent abroad were: John W. Alexander, Gari Melchers, Alexander Harrison, John S. Sargent, and Frank D. Millet. Cecilia Beaux received the gold medal for her portrait of Mrs. and Miss Griscom; Henry O. Tanner, a negro painter, by the way, received the Walter Lippincott prize, and the Mary Smith prize was awarded to Mary E. R. Clay. There were purchased for the Temple Fund paintings by Henry O. Tanner and John W. Alexander. In the spring exhibition of the Philadelphia Art Club the gold medal was awarded to Clara McChesney, and the medal for the fall display went to Charles Harry Eaton, on both occasions for water colors. Other Philadelphia exhibitions took place at the Plastic and the T Square clubs.

The twenty-second annual exhibition of the Society of American Artists was held in New York from March 24 to April 28. Irving R. Wiles took the Shaw Fund award with its money prize of \$1500; the Webb landscape prize going to W. Elmer Schofield. No special departures were noticeable, and the impressionistic tendency of past years was less in evidence. Louis Loeb was elected to membership. The Ten Americans, seceders from the society, though numbering nine this year, as last, held a display at the Durand-Ruel Gallery, New York, but offered nothing unusual or out of special harmony with the show of the parent society.

For twelve days only the American Water Color Society held its annual exhibition in the small ball-room of the Waldorf-Astoria Hotel, closing February 17. As a consequence, it was possible to hang fewer pictures, two hundred and fifty only having been accepted. The show was not successful financially, the expenses far exceeding the receipts, and the attendance being less than usual. The William T. Evans prize was awarded to B. West Clinedinst. Important work was contributed by Albert Sterner, Arthur I. Keller, Irving R. Wiles, Louis Loeb, Rosina Emmet Sherwood, Childe Hassam, L. E. Earle, W. L. Lathrop, and Jules Guérin. At the galleries of the American Art Association the Society of Landscape Painters held their second annual exhibition, beginning May 16. The display was creditable, though along conventional lines. A retrospective exhibition of work by members, teachers, and students, present and past, of the Art Students' League, in celebration of the twenty-fifth anniversary of its organization, was held at the Fine Arts Building from May 10 to 20; among the more prominent exhibitors were John LaFarge, Thomas W. Dewing, William M. Chase, George de Forest Brush, Douglas Volk, C. Y. Turner, Robert Reid, Albert Herter, Frank Vincent DuMond, Mr. and Mrs. Sewell, Edwin H. Blashfield, Edward Simmons, and George W. Maynard.

A Society of Miniature Painters was formed early in the year, and held its first exhibition at the Knoedler galleries, the display creating considerable public interest as manifested by a large attendance. Some half a hundred works were shown, the exhibitors being among the best of the artists working in this direction. The following is a partial list of members exhibiting: W. J. Baer, W. J. Whittenmore, Lucia F. Fuller, Laura C. Hills, J. A. Macdougall, I. Josephi, Rhoda Holmes Nichols, and Lydia Field Emmet. The success of the show, demonstrating an active interest in the work, resulted in a permanent organization with promise of annual exhibitions. The first of the autumnal exhibitions was that of the Carnegie Institute, at Pittsburg, which opened November 2, being the fifth annual display. The first prize, of \$1500, was awarded to the French painter, André Dauchez, for his "Kelp Gatherers." Benjamin Foster, of New York, took the second prize of \$1000 with a large landscape of moonlight. A portrait group by Sargent Kendall of a mother and child took the third prize of \$500. Honorable mentions were awarded respectively to Robert W.

Allan, of Glasgow; Jules Oelsson, a Swede identified with English art life for some years, and W. E. Schofield, an American. There were many important pictures from abroad, including works by John Sargent, Anders L. Zorn, Stanhope Forbes, Franz Stuck, A. Degas, J. McN. Whistler, H. H. La Thangue, P. A. Bésnard, and J. J. Shannon. Americans represented were R. W. Vonnoh, Cecilia Beaux, E. C. Tarbell, Frank Benson, Wilton Lockwood, Louis Loeb, Kenyon Cox, and Elizabeth Norse. The exhibition was opened with appropriate exercises, the Chinese minister coming on from Washington to deliver the opening address. On November 9 the New York Water Color Club opened its eleventh annual exhibition, four hundred works being shown.

Displays of the works of individual painters were many and important during the year, and were held at the galleries of the dealers. Prominent among these were "Life of Christ," water colors, by J. J. Tissot, at National Academy of Design building; Dwight W. Tryon, Thomas W. Dewing, and Henry O. Walker, at the Montross Gallery; Frank Hopkinson Smith, Walter L. Palmer, and Elihu P. Vedder, at the Avery Gallery; Henry W. Ranger, Arthur Wardle, and Arthur Hoebner, at the galleries of Arthur Tooth & Sons; F. Siddons Mowbray, George de Forrest Brush, John S. Sargent, Mrs. Leslie Cotton, Julia Haven, Fedor Encke, Paul De Longpré, and Théobald Chartran, at the Knoedler Gallery. At the last-named place, Chartran exhibited a large picture of the "Signing of the Spanish Protocol," in which were represented President McKinley, the French minister, M. Cambon, the secretary of state, Judge Day, and the other officials connected with the French Ministry and State Department. The work, which was commissioned by H. C. Frick, of Pittsburg, was presented to the United States government and hung in the White House. Portraits by Andreas Andersen were shown at the Keppel Gallery, and at the gallery of William Macbeth were held displays by Childe Hassam, Arthur B. Davies, Rosina Emmet Sherwood, and William Keith. Joseph Linden Smith showed many studies of ancient monuments and statuary at the Architectural League rooms. These were made in Egypt, Greece, and Italy mainly. The Clausen Gallery contained during the year special exhibitions by Louis Paul Dessar, George Inness, Jr., W. Gedney Bunce and Lee Lufkin. Other one-man shows included the work of Augustus Franzen, Ben Foster, and Carle J. Blenner, and in Boston, J. H. Twachtman, Wilton Lockwood and J. Appleton Brown.

The club exhibitions for the year assumed an unusual importance, many organizations holding displays for the first time. Some of the clubs held monthly exhibitions during the season, among these being the Union League, the Lotos and the Salmagundi, the last named showing, among other displays, a collection of the works of Ralph A. Blakelock. Others were the Colonial, Democratic, Harmonie, Union League, of Brooklyn, the St. Botolph, of Boston, and many minor organizations.

An effort was made to inaugurate an "American Salon" in the city of Washington, and a display was held in April. The affair was organized by some people rather more prominent socially than artistically, and the co-operation of well-known artists was not asked, the result being that such artists as sent work were dissatisfied, and the display was not in the least a success. At the Metropolitan Museum of Art in May was held a retrospective exhibition of the works of the late Frederick E. Church (*q.v.*), famous in his day as a painter of panoramic views of exceeding detail and fine color. The show came in the nature of a revelation, for the man and his art had been almost forgotten by the past generation, and was quite unknown to the younger people, even those interested in such work. Fourteen works were placed on view in one gallery, and these included "Heart of the Andes," "Niagara Falls," from the Corcoran Gallery; "Morning in the Tropics," "Aurora," "Rainy Season in the Tropics," and "Vale of St. Thomas." Though generally referred to as the most distinguished member of the Hudson River school, it was seen that Mr. Church was a remarkable draughtsman, with an eye for color possessed by few modern men. Seven cartoons, claimed to have been the originals executed by Raphael for the Vatican tapestries, were shown in December at the American Art galleries. They came from the Countess O. de Dobrychine, of Odessa, Russia, and had been previously shown in Paris and London. The owner had received them as an inheritance from her great-grandfather, a Moscow antiquary.

Various exhibitions of pictures of an educational nature were held during the year at the Pratt Institute, Brooklyn. The work of Robert Blum, consisting mainly of his sketches and studies for the decoration of the Mendelssohn Glee Club, and a similar collection of work by Edwin H. Blashfield for the World's Fair at Chicago, the Congressional Library at Washington, and the Waldorf-Astoria Hotel, in New York, were among the important work displayed. A collection of pictures belonging to R. Hall McCormick, mainly of the early English school, with some of the Dutch and Flemish masters, was shown at Copley Hall, Boston, under the auspices of the Boston Art Students' Association, and later the collection was sent to the Carnegie Institute, Pittsburg, through the courtesy of the owner.

Upon the city of Buffalo promising to raise a maintenance fund of \$100,000, and the money having been subscribed, J. J. Albright, a leading citizen of that city, began the erection of an art gallery, placed in the public park. It will be in severe Greek style of architecture, 200 feet long by 100 feet wide, and will have a great court for statuary. For the Pan-American Exposition of 1901 (*q.v.*), William A. Coffin, the artist and art critic, was chosen art director, and Charles Y. Turner was made director of color and decoration. The French government purchased for the Luxembourg Museum picture gallery Alexander Harrison's "En Arcadie," a large painting representing nude figures in a woodland.

The new Appellate Court House, designed and built by James Brown Lord, was decorated by a group of American artists, and the structure was opened early in the year. A frieze in the main hallway was painted by H. Siddons Mowbray, Robert Reid, Willard Metcalf and Charles Y. Turner. In the court-room a large frieze over the judge's bench is by Kenyon Cox, while three large panels were done by Edward E. Simmons, Henry O. Walker, and Edwin H. Blashfield. Other work in the building is by George W. Maynard and Joseph Lauber. For the decoration of the New Memorial Hall of the Massachusetts State House, two of these men, Edward E. Simmons and Henry O. Walker, have been chosen, together with a third, Robert Reid, and to them will fall important compositions of "The Concord Fight," "Return of the Volunteers," subjects of the war of the Revolution and "The Landing of the Pilgrims" and "Eliot Preaching to the Indians." A decoration for the United States Pavilion at the Paris Exposition was made by Robert Reid, and shown in New York early in March before it was shipped abroad. The theme portrayed America lifting the veil and showing the world the resources of the country. There were figures typifying Steam, Electricity, Manufactures, Agriculture, Productiveness, and so on, the arrangement being in good taste. F. Luis Mora decorated the main reading-room of the Lynn, Mass., Public Library with a panel thirty-four by fifteen feet, the subject being the "Awakening of Ignorance."

The awards to American artists exhibiting at the Paris Exposition were as follows: Medals of Honor—John S. Sargent and James McNeil Whistler. Gold Medals—John W. Alexander, Edwin A. Abbey, George De Forest Brush, Cecilia Beaux, Winslow Homer, William M. Chase, and Abbott H. Thayer. Silver Medals—T. Noble Barlow, Frank W. Benson, H. T. Bisbing, Max Bohm, Frederick A. Bridgman, Walter Appleton Clark (drawings), Charles H. Fromuth, Walter Gay, Charles Dana Gibson (drawings), Childe Hassam, J. Humphreys Johnston, Arthur I. Keller. (drawings), Wilton Lockwood, Walter McEwen, Elizabeth Nourse, Robert Reid, Julian Story, H. O. Tanner, Frederic P. Vinton, and Lionel Walden. Bronze Medals—Katharine G. Abbott, J. Carroll Beckwith, George H. Bogert, Robert Blum, William J. Baer (miniatures), W. Gedney Bunce, Maud A. Cowles (drawings), Bruce Crane, Howard C. Christy (drawings), Louise Cox, Henry G. Dearth, W. M. Darling, Charles H. Davis, Louis P. Dessar, M. E. Dickson, Ben Foster, August Franzen, Lucia F. Fuller (miniatures), Robert D. Gauley, Seymour J. Guy, Charles H. Hayden, Laura C. Hills (miniatures), Albert Herter, G. H. Hitchcock, H. Bolton Jones, Ridgway Knight, Sergeant Kendall, Augustus Koopman, Mary F. MacMonnies, F. D. Marsh, Charles A. Needham, Benjamin C. Porter, Charles A. Platt, Howard Pyle (drawings), Edward W. Redfield, Henry W. Ranger, Charles Schreyvogel (drawings), William T. Smedley (drawings), Albert Sterner (drawings), S. Seymour Thomas, Edward C. Tarbell, Robert W. Vonnoh, J. Alden Weir, Irving R. Wiles, Harry Van der Weyden, Charles H. Woodbury, Romanach (Cuba). Honorable Mentions—Martha W. Baxter (miniatures), R. A. Blakelock, Hugh H. Breckenridge, Kate Carl, F. S. Church, E. Irving Couse, Charles C. Curran, Joseph R. De Camp, Thomas Eakins, Charles W. Eaton, J. J. Enneking, A. B. Frost (drawings), E. E. Garnsey, Henry H. Gallison, Jules Guérin (drawings), Frank Holman, Houston, William H. Hyde, Isaac A. Josephi (miniatures), Frederick W. Kost, Homer Lee, Lucas or Lewis, Menocal (Cuba), Willard L. Metcalf, C. Morgan, McIlhenny, Robert C. Minor, J. Francis Murphy, Walter L. Palmer, Maxfield Parrish, F. K. M. Rehn, W. S. Robinson, Julius Rolshoven, John G. Saxon, Sarah C. Sears, W. Elmer Schofield, Henry B. Snell, Theodore C. Steele, Charles J. Theriat and Sadie Waters. The list shows a total of seventy-six medals and thirty-nine honorable mentions, making one hundred and fifteen recompenses in all. This is the largest number awarded to any foreign nation. In sculpture three medals of honor were awarded, Augustus St. Gaudens, Daniel C. French, and Frederick MacMonnies being the recipients. If the absence in the list above of the names of some well-known painters who have pictures at Paris be noted, it should be remembered that artists were not eligible for awards lower than they had received in previous Paris expositions. Several Franco-Americans, also, after the award of gold medals was announced, informed the jury that they would not accept silver or bronze medals.

PALACIO, RAIMUNDO ANDUEZA, former president of Venezuela, died in August, 1900. He was minister of the interior previous to his election to the presidency in

1890. According to the law, his term of office could be for two years only, but in 1892 Palacio planned to extend his term of office by winning to his side the cabinet and congress and by trying to enlarge their powers. His opponents appealed to the Federal Supreme Court, and the decision was against the president. Palacio then assumed dictatorial powers and imprisoned the judges. The opposition banded together under ex-President Crespo as commander-in-chief, and, defeating the troops of the dictator, forced him to yield.

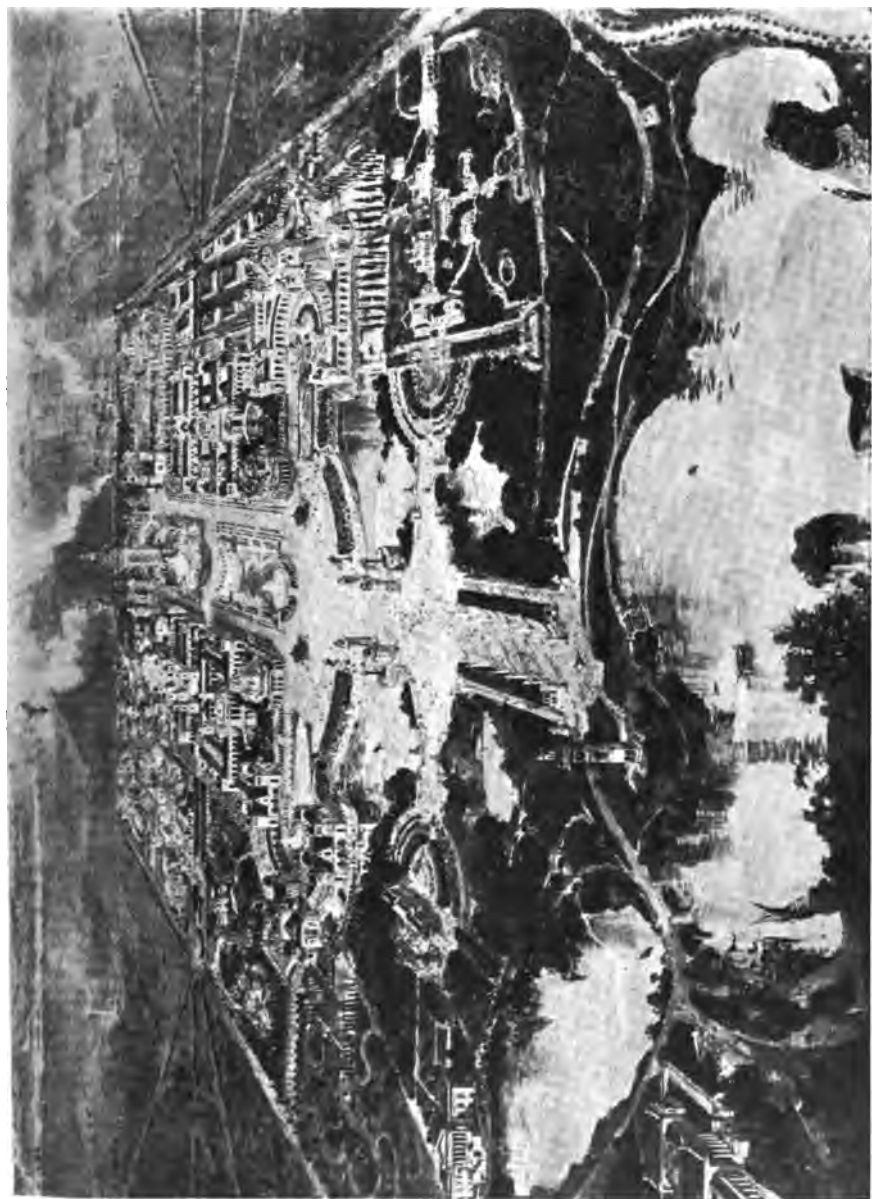
PALEONTOLOGY. *Invertebrate.*—J. P. Smith has prepared a paper on *The Principles of Paleontologic Correlation*, in which he considers (1) direct correlation, where the faunal regions were closely connected and the intermigration of species was easy, and (2) indirect correlation, where faunal regions were separated by barriers (*Journal of Geology*, VIII., No. 8). Vaughan describes a Tertiary coral reef near Bainbridge, Ga., which not only is rich in fossils, but also fills a gap in the faunal succession of the continent. Beecher has described the remains of a gigantic crustacean from the upper devonian of the United States. It is similar to the genus *Eurypterus*, and when restored would have a length of nearly five feet. Were the legs to be extended, it would measure about eight feet across.

Vertebrate.—Numerous discoveries in vertebrate paleontology have followed one another rapidly during the past years, so that our knowledge of the ancestry and development of many forms of mammals is being increased. Among the recent observations one by Lucas, of the rhinoceros with a complete set of cutting teeth, found in the lower oligocene beds of South Dakota, is interesting, because it carries the line of rhinoceroses farther back than we had hitherto known them. In north-eastern Russia Amalitski, a Russian naturalist, has discovered a Permian fauna which seemed to resemble that of Scotland and the United States, and even more closely still the Permian-trias fauna of South Africa. The types found will add greatly to our knowledge of the ancestry of modern reptiles, amphibians, and mammals; but, above all, they are considered to afford good evidence of the wonderfully wide distribution of the land vertebrates in Permian times. C. W. Andrews reviews certain fossil birds from Patagonia, which were of great size and do not show the same geographical relations that characterize others found in this region. G. R. Wieland describes the occurrence of the fossil camel in Roumania. This is the first one known in Europe, previous fossil remains of this animal having been found in India, Algeria, and Siberia.

Among other interesting discoveries recently made were those of the bones of a horse, woodchuck, and goat antelope, found in excavating a cave at Colorado Springs, Col. The last-mentioned species is similar to one found in the Himalayas. In the California quaternary deposits there have recently been found some good fossils of ground sloths. Schlosser traces the origin of the bear family back to the time of the oligocene period to animals related to *Cynodon* and hypothetically to *Uintacyon* of North America. This research is interesting, because *Uintacyon* is one of the genera mentioned by Wortman in his work on the ancestry of the dogs. Hatcher and Paterson have recently made an extensive series of collections of vertebrate fossils in Patagonia, which show the presence in that region of a most abundant fauna in the middle and upper Miocene period. The age of the formations in this locality has been in doubt, but the finding of marine fossils in the beds under those containing vertebrates has served to place them stratigraphically. In B. Dean's new work on the Devonian fishes he finds that a certain species, known as *Paleospondylus*, and hitherto thought to be young specimens of the genus *Coccosteus*, is in reality a species of lamprey.

PALESTINE. See **ARCHAEOLOGY** (paragraph Palestine).

PALMER, General JOHN MCAULEY, a former United States senator and the candidate for President of the Gold Democrats in 1896, died September 25, 1900. He was born in Kentucky in 1817, but early became identified with Illinois, where he was admitted to the bar, and as a Democrat became interested in State politics. As member of the State Senate in 1852-54, together with Lyman Trumbull, he built up the Republican party in Illinois, and as delegate to the first National Republican Convention took an effective part in the campaign of John C. Fremont in 1856. He was presidential elector on the Republican ticket in 1860. In the following year he participated in that last effort toward compromise, the peace convention at Washington. He served with distinction in the Civil War. In 1862 he was made major-general of volunteers, and in 1864 led the Fourteenth Corps in the Atlanta campaign. In 1868 General Palmer was elected Republican governor of his State, but four years later he became a prominent member of the Democratic party. In 1876 he energetically stumped the State for Samuel J. Tilden, and in 1890 was elected United States senator. Being an old-time Democrat, General Palmer could not countenance the Populist elements in the Bryan platform, and in 1896 accepted the nomination for the Presidency from the Gold Democrats.



PAN-AMERICAN EXPOSITION, PLATE I. BIRD'S-EYE VIEW OF THE EXPOSITION.

PANAMA CANAL. See COLOMBIA (paragraph Panama Canal) and NICARAGUA CANAL (paragraph Isthmian Canal Commission).

PAN-AMERICAN CONFERENCE. See MEXICO (paragraph Pan-American Conference).

PAN-AMERICAN EXPOSITION, THE, will be held at Buffalo, N. Y., from May 1 to November 1, 1901. While it is intended to illustrate the progress of the States and countries of the Western Hemisphere and the new possessions of the United States during the nineteenth century, its scope will be broad enough to include all departments of human effort. The project was formulated in 1897 as a semi-private scheme, and Cayuga Island, near Niagara Falls, including fifty acres, was secured as a site and the year 1899 set for the time. The Spanish-American War of 1898 rendered a postponement necessary, and when the interest was revived the enterprise assumed so much greater proportions that the original plan had to be abandoned. On January 19, 1899, the New York State Legislature passed a special act, incorporating the Pan-American Exposition Company with a capital stock of \$2,500,000 and permission to make a bond issue for an equal sum. Three hundred and fifty acres within the limits of Buffalo were then set apart for a site and the date of the opening fixed at May 1. Next the support of Congress and the State Legislature was solicited with prompt success. The latter on March 1 appropriated \$300,000 to be used in preparing a fitting exhibit by the State and created a board of managers to supervise the same. Congress on March 3 set aside \$500,000 for this national exhibit. A board of management was, accordingly, appointed, headed by J. H. Brigham, of the Department of Agriculture, and from this board a special committee to arrange for exhibits from the Philippines, Hawaii, Porto Rico, Cuba, Alaska, the island of Guam, Tutuila, and Manua. In June of the same year the Department of State extended formal invitations to all the governments of the hemisphere to participate, and has since received acceptances from all, except two minor states. Ground was broken in September, and the first building completed in December of the same year, 1899.

The architecture of the Exposition (see ARCHITECTURE, paragraph Pan-American Exposition) will be, in general, a modification of Spanish Renaissance, a compliment offered to the Latin-American countries, from whom valuable assistance and co-operation is promised. It is the intention of Buffalo, by making a feature of electricity, to prove her title of the "Electric City," and her propinquity to Niagara Falls, from which thousands of horse-power can be obtained, makes the plan feasible. Other phases of progress in which the Exposition will surpass all others are in the hydraulic and fountain effects, the horticultural, floral, and garden effects, the original sculptural ornamentation, the color decorations, and the court settings. With the sum of \$10,000,000 at its disposal, exclusive of exhibits, the management feel confident that the Pan-American Exposition will celebrate in a commensurate manner the wonderful progress of the last one hundred years. The principal officers of the enterprise are: John G. Milburn, president; Edwin Fleming, secretary; George L. Williams, treasurer; William I. Buchanan, director-general; George Bleistein, chairman of publicity; Mark Bennitt, superintendent press department; Karl Bitter, director of sculpture; Charles Y. Turner, director of mural decorations, and Frederick W. Taylor, director of concessions. A board of women managers has been chosen to supervise the presentation of the advancement of woman during the century. In lieu of a separate building the exhibits will be shown in the various departments. The president of the board is Mrs. William Hamlin, and the secretary, Miss Marian De Forest.

PARAGUAY, one of the two interior republics of South America. It lies between Brazil and Argentina and touches Bolivia, the other interior republic, on the north-west. The capital is Asunción.

Area and Population.—The republic comprises 23 *partidos* (districts), of which the total estimated area is 98,000 square miles. The estimated white population in 1895 was 432,000, and in 1897, 600,000; but, according to the census of 1899, the inhabitants in that year numbered 655,571, of which 100,571 were Indians. There are in the republic about 20,000 foreigners, principally Argentines, Italians, Germans, and Spaniards. Immigration, though encouraged by the government, is insignificant. Estimated populations of the principal towns are: Asunción (1899), 60,000; Villa Rica, 25,000; Concepcion, 15,000; Carapegua, 13,000; Villa del Pilar and Paraguari, each 10,000; San Pedro and Luque, each 8000.

Government.—The constitution vests the chief executive authority in a president, who is elected for a term of four years, and is assisted by a responsible ministry of five members. The president in 1900 was Señor Emilio Aceval, who began his term of office in November, 1898. The legislative power devolves upon a congress, consisting of a Senate and a Chamber of Deputies, members of both being chosen by popular vote, senators in the proportion of one for each twelve thousand inhabitants

and deputies one for six thousand. There are local magistrates, inferior courts, and a high court of justice. The regular army numbers about fifteen hundred men. Citizens between 20 and 35 years of age are liable to military service.

Finances.—Revenue accrues principally from customs, stamps, and the sale of government lands. Revenue and expenditure in pesos have been reported as follows for fiscal years:

	1895.	1896.	1897.	1899.
Revenue.....	5,120,248	5,832,867	5,752,841	8,956,250
Expenditure.....	4,992,007	7,109,581	8,346,179	8,441,250

The public debt in 1899 has been reported thus: Foreign debt, £994,600 (\$4,839,723) —in addition some 9,876,500 pesos were due to Brazil and about 12,393,600 pesos to Argentina; guarantee debt due the Paraguayan Central Railway, £658,545 (\$3,204,480); internal debt, 11,726,347 pesos, including 7,663,617 pesos in circulating paper. The monetary standard is silver, but the government is on a paper basis, and paper is the chief circulating medium.

Industries and Commerce.—The principal industries are agriculture and cattle raising. Paraguay tea (*yerba maté*) is the chief crop, while other products of some importance are tobacco, fruits, corn, mandioca, sugar, beans, and cotton. In 1899 an estimate, which was probably too high, placed the number of cattle in the country at 4,000,000; nearly 200,000 hides are exported yearly to Buenos Ayres. There are extensive forests of valuable woods, which have begun to be exported. Scarcely any attention is given to mining, though copper, kaolin, and pyrites occur, and iron is abundant in the north and marble in the south. In 1900 the government granted a concession for prospecting for gold, silver, copper, and other ores in the country between the Paraguay and Paraná rivers. Manufactures are few, but at Asunción there are a number of factories, and caña (rum) distilleries exist throughout the country.

The leading exports are *yerba maté*, tobacco, hides, timber, and oranges; the principal imports are textiles, wines, and rice. The values of the imports in gold pesos and of the exports in paper pesos have been reported as follows for fiscal years:

	1896	1897.	1898.	1899.
Imports.....	2,786,333	2,203,459	2,608,487	about 2,150,000
Exports.....	12,292,000	14,467,770	18,228,375	about 18,500,000

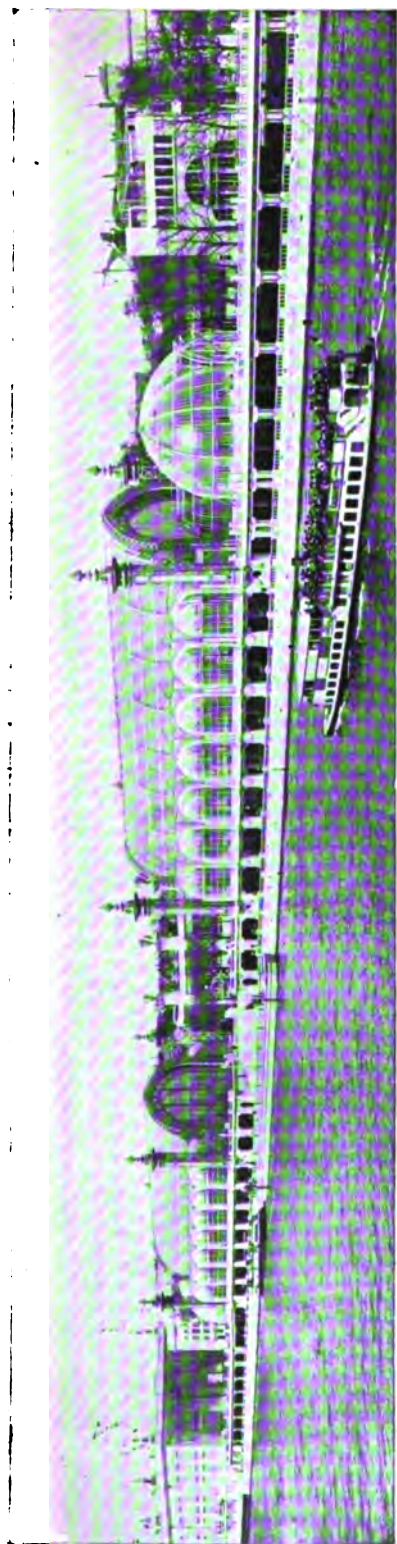
Nearly one-half of the imports, and of the textile imports nearly seven-eighths, come from Great Britain. But in 1900 it was reported that the Germans have the bulk of the foreign trade. It is difficult to trace Paraguayan commerce, as most of the produce sent out or received goes to Buenos Ayres, Montevideo, or a Brazilian port and is there re-exported. In 1897 the *yerba maté* export amounted to 6,547,642 kilogrammes; tobacco, 1,064,593 kilogrammes; hides, 169,490 in number. In 1898 the entrances and clearances at the port of Asunción numbered 418 and 408 respectively. Ship-building is now encouraged by the government, a decree of October 3, 1900, authorizing the payment of subsidies on all vessels built in the republic.

Communications.—Roads in Paraguay, as in most of the Latin-American countries, are few and in bad condition; consequently, transportation is expensive and the development of the country is impeded. There is one railway, under private control, connecting Asunción with Pirapó, 156 miles distant. A telegraph line extends along the railway and another connects Asunción with Corrientes, in Argentina. These and other less important lines aggregate about 600 miles. In 1897 there were 95 post-offices. About 20 miles of tramway are in operation, and in 1900 the government granted concessions for the construction of several other tramways and short lines of railway.

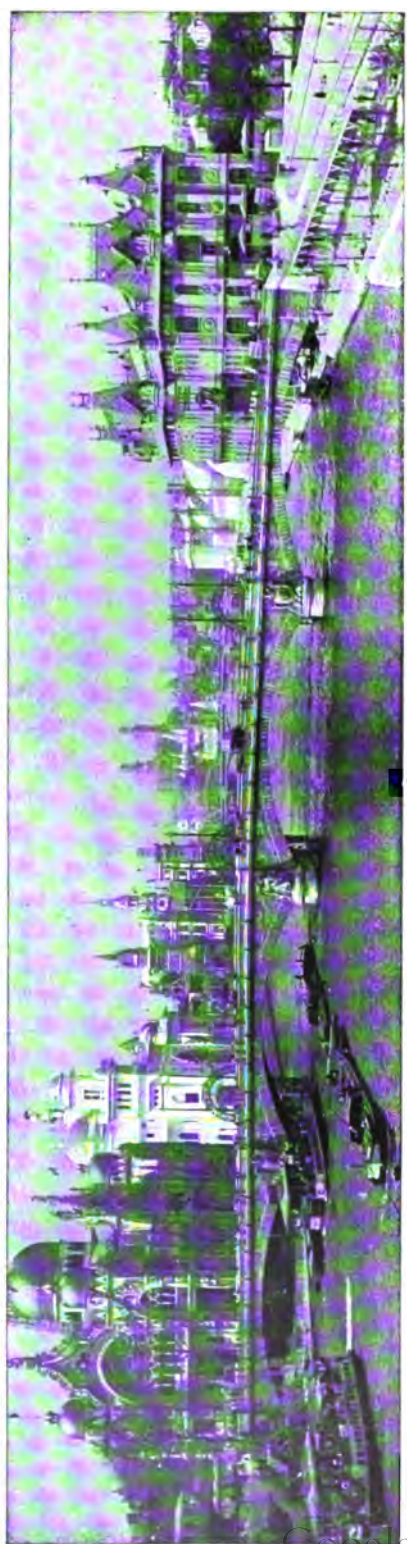
Religion and Education.—The established faith is the Roman Catholic, but religious toleration prevails. In March, 1899, the law of civil marriage was suspended. Education, though free and nominally compulsory, is not in good condition. In 1897 the public and private elementary schools numbered 390, with about 25,000 pupils and 700 teachers. There is a national college at Asunción, with 15 professors and over 200 students. According to the *Bulletin* of the Bureau of American Republics for August, 1900, there are published at Asunción 23 periodicals, of which 9 are daily papers. An official daily paper was established by the government in October, 1900.

The Plague.—In March, 1900, it was declared that the bubonic plague or a very similar disease, which a few months before was regarded as serious in Paraguay, had entirely disappeared from the country. For a time the quarantine established against the pestilence interfered seriously with commerce.

PARASITIC HEMOPTYSIS. Returning missionaries or Chinese laundrymen are charged with bringing to this country parasitic hemoptysis from Asia. A case



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PLATE I. VIEWS OF THE PARIS EXPOSITION.—1. The Horticulture and Arboriculture Buildings. 2. The Pont des Invalides.—On the left of the Street of Nations; on the right is the Paris Municipal Building.

was found in a cat in Michigan in 1894 by Ward, and in a dog by Kellicott in the same year. The Bureau of Animal Industry has found over fifty cases among hogs in Ohio. Dr. Stiles, the zoologist of the bureau, is of the opinion that several cases have already occurred in man and have been taken for tuberculosis. He expects it will appear in localities to which our troops return from service in the East. A trematode worm, *Paragonimus westermanii*, is the parasite causing the disease, which is found among men, hogs, dogs, cats, and tigers. In most cases the lungs alone are involved, nodules in which the parasites are encysted being found throughout these organs. Coughing and spitting of blood result. Microscopic examination reveals the oval eggs of the parasite in the sputum. Stiles mentions cases in which the parasites reached the brain and caused convulsions. There is no specific treatment known.

PARIS EXPOSITION. On July 13, 1892, President Carnot of France proclaimed that a universal exposition of works of art and industrial products would be held in Paris for six months during the year 1900. In the interval between the proclamation and the opening of the Exhibition France was involved in a number of critical political situations, which at times threatened to impair the success of the Exposition. It is generally acknowledged that the Exposition itself has tended to smooth over the troubles of France and to better her relations with other Powers, besides being, undoubtedly, one of the most notable events of the closing century. The Exposition was formally opened by President Loubet on April 14, 1900, and officially closed its doors on November 5.

Grounds, Buildings, etc. — The Paris Exposition of 1900 occupied an area of about 350 acres on the site of the exposition of 1889, in the southwestern part of the city, a space about 12 per cent. larger than the preceding fair, comprising the entire Champ de Mars; the Trocadéro Palace and gardens; the Esplanade des Invalides; the quays on the right bank of the Seine, between the Trocadéro and the Place de la Concorde, comprising the Quai de Billy, Cours-la-Reine, and Quai de la Conférence; the left bank of the Seine, between the Champ de Mars and the Esplanade des Invalides, including the Quai d'Orsay; and that part of the Champs Elysées until lately occupied by the Palais de l'Industrie, a landmark of the exposition of 1855. The Exposition was thus divided into six natural sections — (1) the Champs Elysées, (2) the quays on the right bank of the Seine, (3) the Trocadéro, (4) the Champ de Mars, (5) the left bank of the Seine, (6) the Esplanade des Invalides. In addition, an annex, covering about 275 acres, was established at the Park of Vincennes, about eight miles from the Exposition proper, where the railway, automobile, and bicycle exhibits were displayed and the various international sports held.

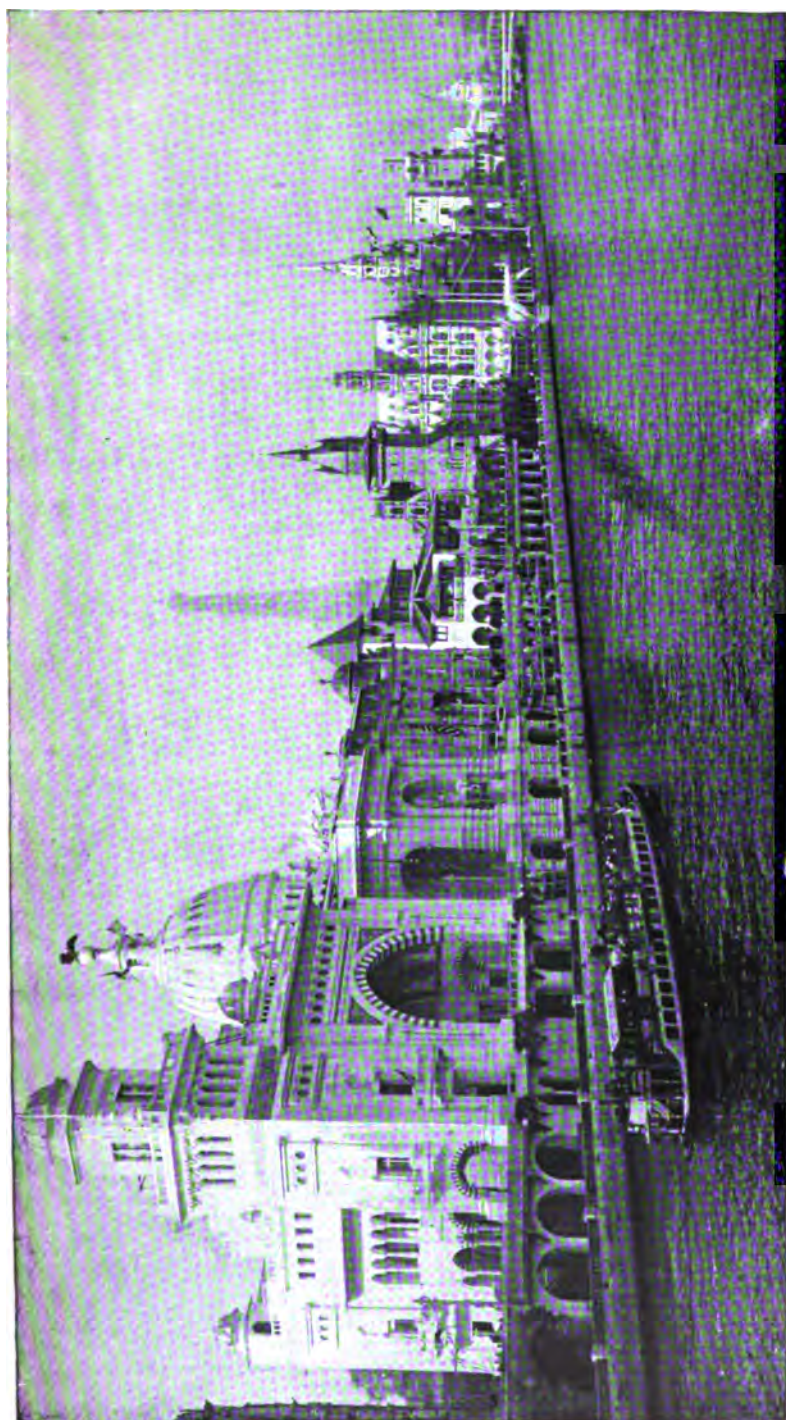
The only buildings remaining from previous expositions were the Trocadéro Palace of the Exposition of 1878, the Palais de l'Industrie, 1855, and the Eiffel Tower, 1889. On the other hand, Paris will gain three notable structures — namely, the Alexander III. Bridge, which connects the Champs Elysées with the Esplanade des Invalides, and the great and small palaces of fine arts, besides the broad new Avenue Nicholas II. These three works of art are among the most noteworthy additions which have been made to the architecture of Paris in many years. The foreign countries participating in the Exposition built national pavilions of great beauty, extending in a double row along the Quai d'Orsay, and in the Trocadéro Park. There were over thirty of these, besides a number of additional pavilions for the special exhibit of national products. The buildings of the United States were (1) the National Pavilion on the Quai d'Orsay, (2) the United States Agricultural Annex, (3) the United States Forestry Annex, (4) the United States Publishers' Building, and (5) the United States Mercantile Marine Annex. There were forty-five entrances to the Exposition. The main entrance was a great structure, modelled on the lines of certain Spanish-Arabian mosques, and cost about \$125,000. It was estimated that fifty thousand persons could pass through the turnstiles of this entrance in one hour. The general estimate of expenses was about 20,000,000 francs for the official buildings on the Champs Elysées, 5,500,000 for those on the Esplanade, and 2,000,000 for those on the quays. The Alexander III. Bridge, which cost in addition over \$1,000,000, is a structure of steel and stone work 257 feet in length and 130 feet in width, said to be one of the most beautiful in point of decoration in the world. Its foundation stone was laid in 1896 by the Russian czar, Nicholas II., and the French president, and it typifies the Franco-Russian alliance. The other permanent structures of the exposition, the two palaces of fine arts, are situated near it, and together cost about \$4,500,000 more. The Grand Palais des Beaux-Arts was designed by three architects, and consists of three united buildings, whose façades front on the Avenue Nicholas II., the Avenue des Champs Elysées, and the Avenue d'Antin, the entire building covering 33,700 square metres. The Petit Palais, on the Avenue Nicholas II., opposite the Grand Palais, was begun in 1897. It covers 6500 square metres. Among the national pavilions, those of the United States and Mexico were

the most expensive, costing in the neighborhood of \$120,000 each. The United States pavilion was built on a rectangular plan with a large dome rising to a height of 160 feet. It has been the subject of both praise and criticism, one objection which has been found with it being the fact that it did not harmonize with the general scheme of the Exposition buildings. The greatest diversity, however, was apparent among the pavilions along the Street of Nations, so that this criticism loses much of its force. The national pavilions of Great Britain, Austria, Hungary, Italy, Spain, Germany, and Russia cost about \$100,000 each, that of the Netherlands \$80,000, and the remainder below \$50,000. The use of staff in the construction of exposition buildings, which was first introduced extensively at the Exposition of 1889 and employed so effectively at the Columbian Exposition at Chicago in 1893, was in 1900 combined with an innovation in the way of a color scheme. Instead of forming a "White City," such as arose on the shores of Lake Michigan, the groups of Exposition buildings at Paris exhibited every conceivable shade of color, through an ingenious method of tinting, which produced an entirely new and picturesque effect. It has been said that, as a whole, the Paris Exposition buildings lacked the ordered symmetry and architectural unity of the Chicago Fair. This effect was partly a studied one, and presented a contrast to the architectural regularity of the city of Paris as the "White City" of 1893 contrasted with the unsymmetrically and rapidly developed city of Chicago.

The most notable group of buildings among those erected by private concessionaires was the collection known as old Paris, a complete town, reproducing many of the most picturesque and historic edifices of the French capital in the sixteenth, seventeenth, and eighteenth centuries. There were also many of the so-called "attractions" usual at international expositions, which, by reason of the magnitude and ingenuity of their arrangement, were the objects of considerable interest. Among these were a reproduction of Andalusia in the time of the Moors, covering a space of 60,000 square feet; the "celestial globe," a revolving sphere 145 feet in diameter, the interior of which represented the planetary system in motion; the "Luminous Palace," a building 110 feet high, constructed almost entirely of glass; the "Palace of Optics and the Great Telescope;" the "Aquarium of Paris;" the puppet-theatre "Guillaume Marionettes;" some notable panoramic exhibitions, and the Eiffel Tower.

There were two main arteries of transportation at the Exposition, each about two miles long, connecting the two chief centres of interest, the Esplanade des Invalides and the Champ de Mars. One of these was an elevated electric railway and the other an elevated moving sidewalk in two adjoining sections, one travelling two and one-half miles per hour and the other five miles per hour.

Exhibits, etc.—The general classification of exhibits was entirely different from the plan followed at previous expositions. By the new classification all similar products were brought together irrespective of the country from which they might severally come. Formerly the various exhibits from each country had been grouped together as single national displays. With the new system of grouping it was possible to study the various exhibits, and to compare the products of different nations in any one department with great facility. There were eighteen groupings in all made by the Exposition authorities, which in turn divided into about one hundred and twenty classes. The products comprised within these groups were exhibited in the eighteen most important halls of the Exposition. The United States Annex to Agriculture on the Champ de Mars contained the government exhibit of agriculture; the United States Annex to Forestry was a log structure 100 by 22 feet in size; the United States Publishers' Building contained the exhibits of American printing-houses and the headquarters of American publishers, and in the United States Annex to the Mercantile Marine were shown the exhibits of the government Navigation and Weather Bureau. By special arrangement the United States commissioner-general was given the entire management of the space allotted to this country. This space was originally fixed at 150,000 square feet, but by subsequent arrangement this was increased to 338,087 feet. Among exhibits in which the United States led were those in the departments of electricity, transportation, and mining and metallurgy. The Post-office Department exhibit was the most extensive of any of the government exhibits at Paris. It included an American post-office in full working order for the accommodation of American visitors in Paris and a complete exhibit showing the history of the postal service of this country. The Agricultural Department's display was very complete, and with some fourteen hundred supplementary exhibits under its control, arranged in various buildings, is expected to create opportunity for an increasing trade in American fruits and cereals, especially corn. Besides the Weather Bureau station, the exhibit of the Navy Department attracted considerable attention. The display of the Treasury Department was scarcely worthy of this important branch of the United States government. The remarkable display in the department of mining and metallurgy was brought together



Turkey United States Austria Bosnia Hungary England Germany Norway Spain Monaco

PLATE II. VIEWS OF THE PARIS EXPOSITION.—The Street of Nations (Pavilions of Foreign Powers), on the left bank of the Seine, between the Pont des Invalides and the Pont de l'Alma (the Quai d'Orsay). This view is from the Pont des Invalides.

through a special arrangement, the collection being made for the Exposition by several important institutions of higher learning. A selected representative of each of these institutions was created honorary mineralogist for the United States by the commissioner-general, and it was decided that the special collections made by each representative should be presented to his institution at the close of the Exhibition. The institutions were Chicago University, Colorado College, Cornell University, Massachusetts Institute of Technology, Michigan School of Mines, and Princeton University. Several other special groups were arranged for from other sources, the whole forming the finest display of the kind at the Exposition. Several States sent special exhibits to Paris, the most notable being those of California, at a State expense of \$130,000, besides \$50,000 provided by the Southern Pacific Railroad for a California exhibit, and the exhibits made by Massachusetts and New York, at an expense of \$60,000 each. From the New York appropriation \$10,000 was transferred to the Lafayette Monument fund.

Two prominent features were noticeable in the display of Exposition exhibits. One was the illustration at one spot of various processes of manufacture, from the raw material up to the finished article. Another was a series of "centennial museums," in which the progress of the arts and sciences during the nineteenth century was set forth. The total number of exhibitors at the Exposition was 75,531, and 42,790 awards were distributed. France was, of course, the largest exhibitor, and received the largest number of prizes. The four foreign countries having the largest number of exhibitors were the United States, Great Britain, Germany, and Russia. Germany probably had the best exhibit as a whole among foreign countries. The British section suffered from many disadvantages. The government granted but £125,000, against considerably more than three times as much appropriated by Germany and nearly \$1,370,000 by the United States. In spite of these and other drawbacks, the British exhibit achieved considerable success. Fifty-six countries in all were invited to participate in the Exposition, and of these, forty were officially represented. The following is an unofficial but approximately correct statement of the prizes won by the four foreign nations having the largest number of exhibitors:

Nation.	Grand Prix.	Gold.	Silver.	Bronze.	Honorable Mention.	Total Awards.	Total Number of Exhibitors.
United States..	215	547	593	501	348	2,204	6,916
Germany.....	236	510	575	321	184	1,826	2,689
England.....	183	406	517	410	208	1,727	2,959
Russia.....	209	346	411	321	206	1,493	2,285

International Congresses.—An important feature of the Paris Exposition was the various international congresses which assembled during the summer months. Most of these congresses were marked by excellent organization, and the care with which the preliminary arrangements had been made evoked admiration from the visiting delegates. In many cases the various scientific and other learned international associations were used as the bases of these congresses. The plan of organization usually followed involved the sending out of invitations by a local commission, inviting the participation and subscription of those interested. Dates were assigned for the various congresses and topics for discussion announced. In many cases these congresses were divided into sections, in order to secure a thorough and critical discussion of subjects closely allied. In other instances the committee of arrangements assigned to various members, who were recognized authorities in their respective fields, the preparation of reports, which should reflect accurately the development and condition of knowledge upon some particular subject. These reports were often printed and distributed to the members at the time of the congresses, so that as much time as possible was afforded for discussion and legislation. Coming as they did at the end of a century, these reports are of great value, and form useful compendiums of information. In other cases the individuals or committees charged with the consideration of a subject and the preparation of a report would accompany it with certain definite conclusions or recommendations to be adopted by the congress. These recommendations were carefully discussed; sometimes adopted, sometimes laid over for consideration by a subsequent congress, and sometimes rejected. In the different congresses different methods of procedure were followed, but in most instances the presiding officer was some well-known Frenchman, while the vice-presidents were selected from the delegates of various nations. Generally, the sessions were opened by a minister or other government official, and the delegates were the recipients of many courtesies, banquets and excursions being arranged in their honor. The sessions were held either in the *Salle des Congrès* or at the *Sorbonne*, and often several were being held simultaneously. It is of interest to note that no conventions bearing on politics or religion were officially recognized by the Exposition. There were in all about

one hundred and twenty congresses planned, of which some eighty were officially recognized.

Lafayette Memorial.—On July 4, which was United States Day at the Exposition, a staff reproduction of the monument to be erected to Lafayette by the United States was unveiled with appropriate ceremonies. It was originally intended that the monument itself should be dedicated, but its completion at so early a date was found impossible. The Lafayette memorial commission was formed in 1898, and the following members appointed by the United States commissioner-general to the Exposition: William R. Day, William B. Allison, Rev. Edward Everett Hale, Dr. W. T. Harris, Archbishop Ireland, John W. Mackay, Melville E. Stone, Edwin A. Potter (succeeding Frank Thompson, deceased), Charles A. Collins, Alexander H. Revell, Charles G. Dawes, and Robert J. Thompson, the originator of the plan. October 19, 1898, was announced as "Lafayette Day" in the public schools, and by that date nearly \$46,000 had been voluntarily subscribed by the school children throughout the country. On March 31, 1899, Congress authorized the issue of fifty thousand souvenir Lafayette dollars, which were placed at the disposal of the memorial committee. The first of these coins to be struck from the mint was presented to President Loubet of France on March 3, 1900. The sculptor of the monument is Paul Wayland Bartlett and the architect Thomas Hastings, these two being selected on the recommendation of a jury composed of J. Q. A. Ward, George B. Post, and John Lafarge. The plan provides for a bronze equestrian statue of Lafayette, surmounting a pedestal of colored marble, Colonne style, with additional bronze ornaments. The gift was formally accepted by the French government, and one of the finest sites in Paris appointed for its erection—the court of the Louvre. Two provisos were made: First, that the work be done under the direction of M. Redon, architect of the Louvre, and, second, that the plans be approved by a commission, consisting of M. Guillaume, director of the division of sculpture of the French Academy; M. Paul Dubois, director of the National School of Fine Arts, and M. Roujon, director of fine arts in the Ministry of Fine Arts. There is in Paris at the present time the Bartholdi statue of Washington and Lafayette.

The cost of the Exposition was originally estimated at 100,000,000 francs, or \$20,000,000, but the actual amount spent was about \$25,000,000. To insure the raising of the amount the French government guaranteed 20,000,000 francs and the city of Paris an equal sum, the remainder being raised by the issue of 3,250,000 bond admission tickets, with a face value of 20 francs each, and by receipts from concessions and other sources of revenue at the Exposition. Each of the bond admission tickets carried with it the right to twenty admissions, and entitled the holder, besides, to participate in a series of lotteries, which had begun in 1896 and were to close in 1900. The holder, in addition, had the choice of reduced rates on the French railroads or a reduction in the price of admission to various attractions granted concessions at the Exposition. The tickets were issued through the leading French banks, which together guaranteed the 65,000,000 francs which the sale of the tickets represented. This was about four times the income received from tickets of admission at the Exposition of 1889. It was possible to obtain these tickets at the hotels of Paris and elsewhere at almost any time during the course of the Exposition for much less than the face value. To offset the prevailing low prices, two tickets were required for admission at certain hours of the day, and on certain special days four tickets were required for admission. During the first four months the daily average of paid entrances was 165,000, after which the paid attendance more than doubled. The largest attendance on one day was on Sunday, September 9, when 600,528 persons passed through the gates. The total attendance exceeded 50,000,000.

No attempt has been made to discuss the exhibits, discussions, etc., relating to art, science, industries, and various other branches, since a treatment of these will be found, in most cases, in the articles on the particular subjects themselves, which will be found elsewhere under the appropriate headings.

PARK, EDWARDS AMASA, professor emeritus of the Andover Theological Seminary, died June 5, 1900. He was 91 years of age, and with the exception of a brief pastorate in a Congregational church at Braintree, and two years at Amherst, he studied and taught at Andover after his graduation from Brown in 1826. While occupying the chair of Christian theology from 1847 to 1881 he figured as one of the foremost teachers of the country in his branch of thought. He wrote memorial sketches of Charles S. Storrs (1833), Samuel C. Jackson (1878), Leonard Woods (1880), and others, and contributed to the religious periodicals, but especially noteworthy is his work in founding and editing the *Bibliotheca Sacra*. He was also one of the editors of the *Sabbath Hymn Book*, and was a prominent member of several historical societies.

PARKE, Colonel JOHN GRUBB, died December 15, 1900, at the age of 73. He was born in Chester County, Penn. After his graduation from the United States Military Academy in 1849, he was assigned to the Corps of Engineers, and was engaged in the surveys of the Pacific Railroad and the marking of the northwest boundary.



PLATE III. VIEWS OF THE PARIS EXPOSITION.—The buildings along the Seine representing “Ancient Paris.”

In 1861 he was appointed brigadier-general of volunteers, and the following winter accompanied General Burnside's expedition to North Carolina, being at the capture of Fort Macon. He was promoted major-general, and was chief of the staff of the Ninth Corps in the Maryland campaign. When General Burnside succeeded to the command of the Army of the Potomac, General Parke was retained as his chief of staff, and took part in the battle of Fredericksburg. He was in command of the Ninth Corps during the march to Vicksburg and later in the Richmond campaign. He was present at the battles of the Wilderness and Spottsylvania, and received the brevet of colonel for his services in command of the left wing of General Sherman's army at Jackson, the brevet of brigadier-general for his part in the defence of Knoxville, Tenn., and of major-general for his successful repulse of the attack on Fort Steadman, Va. After the war General Parke was commissioned major (1864), lieutenant-colonel (1879), and colonel (1884) in the Engineer Corps, and continued his work on boundary surveys and fortifications. In 1887 he was appointed superintendent of the United States Military Academy, and was retired in 1889.

PARKS. The following table gives the population, area devoted to parks, and the percentage of the total area which is in parks, for the 50 largest cities in America. The figures were taken from the *Bulletin* of the United States Department of Labor for September, 1900. It will be seen that Columbus, O., has the largest percentage of its area devoted to parks, and its neighboring city, Dayton, the smallest park-area of the cities on the list. It must be remembered, however, that two factors enter into this proportion, and that where a city has a great area in proportion to its population, like St. Paul, the need for public parks is not so great as in a densely crowded city, like Jersey City. The latter city, crowded as it is, is one of the most poorly provided with parks of the cities of the United States.

CITIES.	June, 1900, Population.	Area of city in acres.	AREA OF PARKS.		Percentage of area in parks.*
			Owned by city.	Not owned by city.	
New York, N. Y.	3,437,908	197,192	6,909	....	3.4
Chicago, Ill.	1,698,577	129,340	2,151	....	1.7
Philadelphia, Pa.	1,293,697	84,983	4,044	....	4.6
St. Louis, Mo.	575,328	39,377	2,177	....	5.5
Boston, Mass.	560,893	60,661	2,618	....	4.3
Baltimore, Md.	508,967	24,172	1,126	4	4.7
Cleveland, O.	381,568	21,190	1,326	....	6.2
Buffalo, N. Y.	352,319	25,344	1,023	....	4.0
San Francisco, Cal.	342,788	27,000	1,193	....	4.4
Cincinnati, O.	325,908	20,660	539	....	2.6
Pittsburg, Pa.	321,616	19,418	866	....	4.5
New Orleans, La.	287,104	125,600	553	220	.6
Detroit, Mich.	286,704	18,560	1,066	....	5.7
Milwaukee, Wis.	285,315	18,626	435	....	3.2
Washington, D. C.	278,718	44,390	1	3,596	8.1
Newark, N. J.	246,070	11,840	19	336	2.8
Jersey City, N. J.	206,433	8,320	18	....	.2
Louisville, Ky.	204,731	12,800	1,350	20	10.6
Minneapolis, Minn.	202,718	34,108	1,553	....	4.5
Providence, R. I.	175,597	11,708	544	....	4.6
Indianapolis, Ind.	169,164	17,792	1,225	24	7.1
Kansas City, Mo.	163,753	16,640	279	....	1.7
St. Paul, Minn.	163,632	35,453	599	....	1.7
Rochester, N. Y.	162,426	11,686	654	....	5.6
Denver, Colo.	133,859	31,435	571	....	1.8
Toledo, O.	131,822	18,226	809	....	4.4
Allegheny, Pa.	129,896	5,040	360	....	6.9
Columbus, O.	125,560	10,400	196	912	16.0
Worcester, Mass.	118,421	21,773	887	....	1.8
Syracuse, N. Y.	108,374	10,041	249	....	2.4
New Haven, Conn.	108,027	14,340	1,100	....	7.7
Paterson, N. J.	106,171	5,367	96	....	1.8
Fall River, Mass.	104,863	26,240	89	....	.3
St. Joseph, Mo.	102,979	6,400	27	....	.4
Omaha, Neb.	102,565	15,680	598	....	3.8
Los Angeles, Cal.	102,479	27,774	3,720	....	14.0
Memphis, Tenn.	102,320	10,240	18	....	.1
Scranton, Pa.	102,026	12,196	97	....	.8
Lowell, Mass.	94,960	7,932	125	....	1.5
Albany, N. Y.	94,151	6,867	470	....	6.8
Cambridge, Mass.	91,866	4,132	285	....	6.8
Portland, Oreg.	90,426	25,600	205	....	.8
Atlanta, Ga.	89,872	7,040	146	....	2.1
Grand Rapids, Mich.	87,565	11,200	136	....	1.2
Dayton, O.	85,323	6,720	4	....	.6
Richmond, Va.	85,060	3,526	373	9	10.0
Nashville, Tenn.	80,865	5,990	8	....	.1
Seattle, Wash.	80,671	30,730	415	25	1.4
Hartford, Conn.	79,850	11,065	513	14	4.8
Reading, Pa.	78,961	3,965	186	....	4.7

* Regardless of ownership.

PARTHENOGENESIS, ARTIFICIAL. See BIOLOGY.

PASSION PLAY AT OBERAMMERGAU. As the name indicates, it is a dramatic representation of the chief events of the life of the Saviour given periodically at Oberammergau. It is the final stage in the long line of evolution from the embryonic dithyrambs of the Greeks through the mysteries and miracle plays of the middle ages. It has its own history, which tradition brings back to the plague of 1634. The villagers made a solemn vow to perform the play every 10 years, if the epidemic would cease, and the vow has been most religiously kept ever since, as the plague, according to the tradition, really did cease immediately. The decennial recurrence has been broken but once. Some extra performances have occurred, as e.g. in 1815 to celebrate the end of the Napoleonic wars. The season of 1870, interrupted by the Franco-Prussian War, was brought to an end in 1871. Oberammergau is a Catholic village, with a most picturesque situation in the Bavarian Tyrol on the Ammer River, in the district Garmisch. Hard by is a giant monument—a gift of King Ludwig II. in 1875, the work of the famous sculptor Halbig. It represents Christ on the Cross, with Mary and St. John. The performance originally took place in front of the church, but the growing multitude of pilgrims necessitated the removal to the present meadow, with the wooded hills in the background. The performances in the open air, lasting 8 to 9 hours, entailed much discomfort when the weather happened to be inclement. Accordingly, in 1889, about one-fourth of the seats were roofed over, but this was found insufficient, and a new theatre was erected in 1899 at a cost of nearly \$100,000 with a seating capacity of 4000, boxes not included, while formerly as many as 6000 persons could be accommodated. The prices range from two to twelve marks (fifty cents to three dollars). The play in its present form is not the old mediæval mystery originally performed with the supernatural elements in strongest evidence. It was modified by each succeeding director in charge of the production, and Father Rosner, a learned Jesuit, remodelled it on the lines of a strictly classical play. The lofty severity of the style was beyond the intellectual and histrionic powers of the peasants, and so, at the beginning of the nineteenth century, Father Ottmar Weiss wrote a simplified version of the play. This is the text used at present, with some minor modifications by the famous Rev. Alois Daisenberger (died in 1883), for over fifty years pastor of the village, and its leading spirit, whose untiring efforts were devoted to the moral and intellectual uplifting of his parishioners. The music was composed for the play by the schoolmaster, Rochus Dedler, and though far from serious, presents a good illustration of a perfect adaptation of simple means to magnificent ends, as more serious music would unfit the indigenous singers for its performance. The qualification of being a native is a *conditio sine quâ non*, and in the performance of 1900 there were 685 participants (among them about 50 women and 200 children), i.e., nearly 50 per cent. of a population of 1400. The large stage, divided into three parts in mediæval fashion, allows of stirring mass effects, and the portions of the play dealing with such famed spots as Calvary, Golgotha and Gethsemane have the advantage of open air and the natural background of the stage. The play consists of 17 separate acts in the genuine sense of the word, with 24 tableaux designed mainly to be used as illustrations, besides the prologue and vocal and choral interludes. The preparations for the performances are carried on during the ten year intervals, through ordinary coaching and performances of "practice plays" which have, in addition, the special purpose of discovering new talent. The training of the chorus, with the musical equipment of ordinary peasants, is by no means the least province of special exertion on the part of the supervising director. Another difficult problem to cope with is the management of the crowds on the stage, which often number about five hundred. The actors are all selected with a view to their physical qualifications for the parts assumed, as well as to their histrionic endowments and moral uprightness, inferior rôles having often been assigned as a sort of punishment.

The performances for 1900 were scheduled for May 20, 27; June 4, 10, 16, 17, 24, 29; July 1, 8, 15, 22, 29; August 5, 8, 12, 15, 19, 25, 26; September 2, 8, 9, 16, 23, 30, with ample provision for performances on the days following, if too many visitors should be turned away unaccommodated. In all nearly 300,000 people witnessed the play in 1900. The first presentation on May 20 was practically a general dress rehearsal for the benefit of nearly 800 press representatives from all parts of the world. The remaining 3200 seats were disposed of weeks in advance. The production lasted 3½ hours in the morning, and resumed after an intermission at 1.30 P.M., ended a few minutes before six, thus consuming nearly eight hours for actual play. The staging, handling of the mere numbers, the grouping, and color-effects were all beyond cavi. The colors of the garments were chosen by a past-master in harmonious combinations, especially in scenes like the Entrance of Jesus into Jerusalem, where the variety of garments in the great crowd would not, under ordinary circumstances, produce effects pleasing to the eye. In a way the



THE OBERAMMERGAU PASSION PLAY OF 1900—The scene of the arraignment of Christ before Pontius Pilate.

chorus was the weakest spot of the performance. Thirty-five unprofessional singers spread out in a single line could not be expected to meet the demands of the subject and especially in so large a theatre. They were sufficient in the purely lyric and softer passages, but the effect was weak in scenes of jubilation, excitement and deprecation. But the genuine epic majesty with which they appeared upon the stage and imperceptibly withdrew from it when the action required it, won the admiration of every one in the audience. People who had seen the passion play performed on former occasions generally declared the representations of 1900 as in every way superior to the others within their memory. The net profits of the festivals go to cover the expenses of the succeeding production, and on many communal improvements of the village, the church and the school being among the principal beneficiaries of the surplus.

PATTEN, E. JARVIS, inventor, died November 12, 1900. He was born in Maine, 1852, graduated from West Point in 1877, and served as lieutenant in the regular army on Western frontier duty. He invented an ingenious multiplex telegraph system, by which twelve messages may be sent at the same time over the same wire without interference. The Carbide Company, of which he was the vice-president, was formed by his friend, James E. Campbell, to exploit Mr. Patten's invention for the manufacture of carbide.

PAUPERISM. The technical and legal definition of a pauper is one who receives public aid from funds raised by taxation. Pauperism, therefore, would properly relate to this class of persons and to the methods employed in dealing with them; but the term has a wider significance, and is popularly used to cover all kinds of charity, public and private, and in this sense we shall employ it here.

The Statistics of Pauperism.—There are no satisfactory statistics of pauperism in this country, and both its extent and variation from year to year can be but very roughly approximated by the statistical method. In England, however, the statistics of public poor relief are very accurately reported on a uniform basis for England and Wales. The latest available figures for 1900 show that at the end of June of that year the number of paupers, excluding lunatics in county and borough asylums and excluding vagrants, was 660,868, or 20.8 per 1000 inhabitants. A relatively lower proportion than for the same date in any year of the preceding 43 years. The English figures are reported for the last day of each week in each month of the year; and comparison of the figures just quoted with those for the previous years will show, as regards each of the three months of the quarter ending in June, the proportion was smaller in 1900 than in any of the preceding 43 years. This is not only true of England and Wales, but almost as good a showing is made for the metropolis of London, which, with a population of 4,546,752, had, at the end of June, 1900, 96,384 paupers, or 21.2 per 1000 inhabitants, which was a smaller proportion than for the corresponding week in 39 out of the 43 preceding years; indeed, in that whole period, in only two years, 1891 and 1892, was the proportion lower, being 20.6 and 20.3 respectively. The following table gives the corresponding figures for the last day of the last week in June for each year from 1800 to 1900 inclusive, first for England and Wales; and second for the metropolis of London.

YEAR.	ENGLAND AND WALES.		METROPOLIS OF LONDON.	
	Number of paupers last day of 4th week of June.	Number per 1,000 inhabitants.	Number of paupers last day of 4th week of June.	Number per 1,000 inhabitants.
1800.....	664,141	23.3	87,600	21.2
1801.....	652,594	22.7	86,109	20.6
1802.....	651,924	22.4	85,731	20.3
1803.....	664,846	22.0	90,380	21.2
1804.....	682,176	22.9	93,697	21.8
1805.....	703,511	23.4	96,905	22.8
1806.....	697,846	23.0	96,969	22.1
1807.....	695,323	22.6	96,652	21.9
1808.....	734,177	23.6	98,497	22.1
1809.....	675,211	21.5	97,117	21.6
1900.....	660,868	20.8	96,384	21.2

There is considerable outdoor relief given from the public funds in England, and it is interesting to note, from the following table, the proportions of outdoor and indoor relief covered by the figures just quoted:

YEAR.	ENGLAND AND WALES.		METROPOLIS OF LONDON.	
	Number of paupers last day of 4th week of June.		Number of paupers last day of 4th week of June.	
	Outdoor.	Indoor.	Outdoor.	Indoor.
1890.....	499,010	165,131	33,333	54,267
1891.....	486,738	165,766	32,128	53,961
1892.....	484,006	167,918	30,893	54,828
1893.....	488,210	176,636	32,840	57,540
1894.....	498,971	183,305	34,018	59,679
1895.....	517,150	186,361	35,923	60,982
1896.....	511,425	186,421	36,092	60,497
1897.....	507,082	188,241	35,739	60,913
1898.....	540,856	193,821	35,801	62,696
1899.....	484,459	190,752	34,757	62,360
1900.....	472,178	188,690	34,906	61,476

At the beginning of 1880, there were, in England and Wales, 74,000 more paupers than in 1900, though the population had increased 6,500,000. The *London Times* calls attention to the fact that it is gratifying to notice that the reduction in pauperism has scarcely been retarded by the act of 1894, which placed the control of the election of guardians, and hence the distribution of relief, in the hands of the working classes themselves. More than a third of the persons relieved were over 65 years of age.

No such complete statistics can be found for the United States, nor even for any single State system of poor relief in this country. The United States census gives the total number of inmates of almshouses for each census year. The census of 1880 shows 66,203 paupers in almshouses, or 1.32 per 1000 inhabitants; and that of 1890, 73,045 or 1.17 per 1000 inhabitants. The figures for 1900 have not yet been announced by the Census Bureau. These figures are not comparable, however, with those in England, because the almshouse system is not employed at all in many parts of the United States, and considerable outdoor relief is given of which the census can obtain no record. The census of pauperism for the State of Massachusetts shows the aggregate number of State and town paupers on July 1, 1899, to be 33,187, including 120 vagrants, but excluding the insane. The same figures for July 1, 1900, were 33,700, including 136 vagrants. The last report of the Massachusetts State Board of Charity also gives the aggregate number of persons entirely or partially supported by the cities and towns, for each year for a period of 20 years. The figure for the year 1899-1900 is 30,423, which is less than that for either of the two preceding years, or for the year 1894-95, but greater than that for any other year in this period; and in general it may be said that there is a pretty steady increase absolutely from the figure for 1880-81, which was 21,872. Whether there has been a proportional increase or not, the tables do not show.

Outdoor Relief.—In general it may be said that, especially in the cities in the United States, there is a growing tendency to abolish or reduce public outdoor relief. This policy is advocated by the Charity Organization societies and by most of the private charities, which claim that they are able to deal with all worthy cases demanding relief in their homes. For political reasons also public outdoor relief seems to be unadvisable. The whole subject was again discussed by the National Conference of Charities and Correction at its meeting in Topeka in May, 1900; and the history of outdoor relief in the 40 largest cities in the United States has been studied by Mr. Frederick Almy and his results published in the *Charities Review* for March and April, 1899. Mr. Almy further discusses the question in an article on Public and Private Outdoor Relief, published in the *Twenty-seventh Annual Report* of the National Conference of Charities and Correction (1900). Some additional figures, showing the percentage of reduction of public outdoor relief in the 20 largest cities in the United States, since 1897, probably emanate from the same source, and are quoted in *Charities* for February 23, 1901, page 156, as follows:

	1897.	1900.	Percentage of reduction.
New York.....	None.	None.	.....
Brooklyn.....	None.	None.	.....
Chicago.....	\$136,300	\$98,363	10 per cent.
Philadelphia.....	None.	None.	.....
St. Louis.....	Trifling.	Trifling.	.....
Boston.....	\$40,667	\$45,080	7 per cent.
Baltimore.....	None.	None.	.....
Cleveland.....	\$32,128	\$31,342	33 per cent.

	1897.	1900.	Percentage of reduction.
Buffalo	\$108,920	\$51,000	53 per cent.
Cincinnati	5,590	4,693	15 "
Washington	None.	None.	.....
San Francisco	None.	None.	.....
Detroit	\$50,545	\$44,005	13 per cent.
New Orleans	Trifling.	Trifling.	.....
Pittsburg	\$15,323	\$7,975	48 per cent.
Milwaukee	76,987	35,502	54 "
Louisville	Coal only.	Coal only.	.....
Minneapolis	\$23,538	\$11,485	51 per cent.
Newark	20,792	18,140	13 "
Jersey City	6,000	5,296	12 "
Kansas City	None.	None.	.....

County and Municipal Charities.—Mr. Hugh F. Fox, chairman of the section on county and municipal charities, of the National Conference which met at Topeka in May, 1900, presented a report dealing with *The Centralizing Tendencies in Administration*. The conclusions of his report are summarized as follows:

"First. That the State should regulate, by legislation, the disposition and care of all persons who are public charges, whether dependent, defective, or delinquent.

"Second. That the State should supervise all institutions for the care of such persons and inspect them regularly.

"Third. That the State should enact and enforce a civil service system of competitive examinations for the employees of all such institutions and for local overseers of the poor.

"Fourth. That the plans for all such institutions should be approved by the State Board of Charities before adoption.

"Fifth. That the State Board of Charities should be entirely non-political.

"Sixth. That the State Board of Charities should inspect all private charitable societies, etc., annually, and that all such societies be required to obtain a charter subject to the sanction of the State board.

"Seventh. That the State generally takes better and wiser care of its defectives and delinquents than do the counties and cities, especially (with regard to the defectives) the acute cases and those that will yield to skilful treatment.

"Eighth. That the expense of maintenance should fall upon the community in which the person has a legal settlement, the State assuming only the cost of administration."

The almshouse is the unit of relief in the American poor-law system. In it focus most of the problems of pauperism. Miss Mary Vida Clark, of the New York State Charities Aid Association, presented a very instructive paper on the American Almshouse, which is published in the report of the National Conference for 1900, and Mr. Robert W. Heberd, secretary of the New York State Board of Charities, has presented in the *Charities Review*, in the series of papers on American philanthropy of the Nineteenth Century, a careful study of the *Institutional Care of Destitute Adults*. The major part of Mr. Heberd's study is devoted to the consideration of the establishment and growth of almshouses; he gives special attention to the three great almshouses in Boston, Philadelphia, and New York, and to the conditions and methods prevailing in those institutions at the present time, pointing out needed reforms; but, he says, "The very size of these great almshouse institutions of Boston, Philadelphia, and New York makes radical and wholesale reforms in their administration exceedingly difficult of accomplishment. The capital invested in buildings, their relative usefulness for other purposes, and the cost of establishing a new system, even though it would clearly prove economical in the end, all help to prevent the making of changes that are everywhere recognized as most desirable. Another potent factor is the tendency to criticise even reasonable expenditures for the care of the poor, and a lack of interest on the part of the public generally. Worse than all, perhaps, the frequent changes in the personnel of the service, through politics or other causes, too often prevent that continuity of intelligent effort which is more necessary to the accomplishment of great results in the administration of charities than in almost any other difficult undertaking of a public nature." In connection with Mr. Heberd's article, mention should also be made of another in the same series, published in the *Charities Review*, by Dr. E. T. Devine, on *The Relief and Care of the Poor in Their Homes*. These two chapters in the history of American philanthropy supplement each other and give a very good survey of the problems of pauperism considered from the point of view of the efforts made to solve them.

Mr. W. L. A. Johnson, commissioner of labor of Kansas, has made an investigation into the administration of county charities in that State. In his fifteenth

annual report he publishes the results, which, it is feared, are all too typical of conditions prevailing in country districts in many other places outside of Kansas. In the county asylums it is shown that there is no provision for the proper separation of the sexes, or for any classification and separation of the aged and respectable poor from the dissolute, idiotic, and vicious. Able-bodied persons can, under the law, enter the asylum, and there are no adequate restrictions upon the abuses of this privilege. Superintendents are not required to possess necessary qualifications; children are, and may be, retained in the almshouse. Outdoor relief is given and administered by public officials, chosen for short terms, and is consequently increasing in amount. Signs of reform are manifest in some counties in Kansas, where the people have been aroused by an educational campaign. There is in every community a modicum of necessary and inevitable pauperism which should be provided for generously and humanely. All pauperism above this amount is a disease, which spreads in proportion to the lack of preventive measures and the general indifference of the people.

Charity Organization.—The history and principles of the Charity organization movement are very generally known. A fresh statement of them may be found in the *Charities Review* for August, 1900, and a résumé of the work of the year 1900, in the same periodical for February, 1901; both accounts are written by a leading authority, Dr. E. T. Devine. These societies deal with a large amount of the shifting beggar population of our large cities, in addition to cases of temporary distress in the families of the working classes. Exceptional interest, therefore, attaches to the causes of poverty assigned to the cases they treat. The Charity Organization Society of the City of New York, in its report for the year ending June, 1900, reports statistics covering 1460 cases of heads of families, involving nearly 6000 persons. Of the 1460 applicants, nearly 87 per cent. could both read and write; the chief cause of need is given as follows: Disregard of family ties (desertion, neglect to contribute by children, by brothers, sisters, or other natural supporters), 8.28 per cent.; intemperance (abuse of stimulants and narcotics), 13.7 per cent.; licentiousness, 1.15 per cent.; dishonesty or other moral defects, 1.92 per cent.; lack of thrift, industry, or judgment, 10.22 per cent.; physical or mental defects (blind, deaf, crippled from birth, insane, feeble-minded, etc.), 2.81 per cent.; sickness, accident or death, 25.14 per cent.; lack of employment, not due to employee (changes in trade, introduction of machinery, hard times, etc.), 19.45 per cent.; defective sanitation, .07 per cent.; degrading surroundings, .83 per cent.; unwise philanthropy, 2.7 per cent.; unclassified, 16.10 per cent.

PAVEMENTS. The table on the opposite page, from the *Bulletin* of the United States Department of Labor, issued September, 1900, gives the statistics for the paving of the fifty largest cities of the United States. In it is stated the number of square yards of paved and unpaved streets, and in the case of the former the quantity of the different kinds of paving material. According to this table, asphalt seems to be the most-used form of pavement and wood blocks the least popular material. See STREET CLEANING.

PEABODY MUSEUM, CAMBRIDGE, MASS. See ANTHROPOLOGY IN AMERICA and ARCHÆOLOGY (AMERICAN).

PEARL BUTTONS. See BUTTONS.

PEKING. See CHINESE EMPIRE (paragraph Cities of China).

PENNSYLVANIA, an Eastern State of the United States, has an area of 45,215 square miles. The capital is Harrisburg. Pennsylvania was one of the original thirteen States.

Mineralogy.—Pennsylvania far outranks every other State in the production of coal, having in 1899 a total product nearly six times as large as the output of Illinois, the second coal-producing State. In 1899 the number of mines in operation was 687; production of anthracite coal, 60,418,005 short tons, valued at \$88,142,130; bituminous coal, 74,150,175 short tons, valued at \$56,247,791; total production, 134,568,180 short tons, valued at \$144,389,921. Compared with 1898, the total coal output shows an increase in production of 16,020,403 short tons, and in value \$25,622,796. This increase in tonnage exceeded the entire product of any other two States, excepting Illinois, West Virginia, and Ohio. The total value of Pennsylvania's product in 1899 was 56 per cent. of all the coal produced in the United States that year.

The production of iron ore was: Magnetite, 815,771 long tons; brown hematite, 152,468 tons; red hematite, 38,331 tons, and carbonate, 2757 tons—in all, 1,009,377 long tons, valued at \$1,991,772, an increase over the preceding year of 236,245 long tons, or 30.6 per cent. The production of crude petroleum amounted to 13,053,603 barrels, valued at \$17,053,410. The decline in quantity of petroleum produced was more than compensated for by the advance in price. Quarrying yielded five grades of stone, the output values of which were: Limestone, \$3,088,583; slate, \$2,537,022;

CITIES.	Population.	SQUARE YARDS OF STREETS PAVED.						Gravel.	All other kinds.	Total paved streets.	Square yards of unpaved streets.
		Cobble-stones.	Granite blocks.	Bricks.	Wooden blocks.	Asphalt and asphalt blocks.	Macadam.				
New York, N. Y.	8,437,302	4,407,640	9,376,300	666,980	1,408	4,881,600	13,129,800	298,980	57,800	29,500,488	8,718,000
Chicago, Ill.	1,686,375	45,800	580,400	560,300	15,984,300	1,573,000	7,398,000	85,883,400	118,538	85,883,400	56,025,600
Philadelphia, Pa.	1,583,537	9,517,717	8,775,880	1,388,995	148,097	3,696,985	2,082,188	10,879,774	2,539,098	10,879,774	11,180,742
St. Louis, Mo.	576,338	1,960,869	1,960,869	498,397	148,097	3,696,985	5,586,890	8,916,086	8,787,964	8,916,086	823,938
Boston, Mass.	660,892	11,381	1,912,176	6,375	7,800	829,511	5,346,415	1,516,816	2,208,840	8,787,964	1,000,000
Baltimore, Md.	608,657	7,413,980	787,178	1,178,000	7,800	319,900	12,948	116,160	2,112,373	6,097,513	7,075,300
Cleveland, O.	381,754	478	131,698	131,698	748	4,007,464	59,517	1,000,000	8,311,028	6,301,778	6,096,582
Buffalo, N. Y.	352,319	433,349	976,248	435,401	2,800	416,811	5,786,487	38,000	180,000	9,610,664	8,900,000
San Francisco, Cal.	312,782	1,913,000	980,000	189,000	1,000	1,090,000	470,000	806,000	722,000	8,900,000	8,900,000
Cincinnati, O.	286,902	1,490,000	486,000	598,971	8,781,717	508,897	484,040	8,147	3,147	8,949,000	4,000,000
Pittsburg, Pa.	287,014	666,000	486,000	598,971	1,487,587	312,856	11,980	6,091,118	2,208,840	6,072,537	5,188,402
New Orleans, La.	285,804	39,804	486,000	598,971	1,487,587	312,856	11,980	400,000	2,208,840	2,194,369	946,638
Detroit, Mich.	285,815	251,645	285,815	18,908	79,411	616,071	288,324	400,000	1,302,369	1,884,841	1,573,602
Milwaukee, Wis.	278,718	285,815	285,815	18,908	79,411	616,071	288,324	400,000	1,302,369	1,884,841	1,573,602
Washington, D. C.	246,070	285,815	285,815	18,908	79,411	616,071	288,324	400,000	1,302,369	1,884,841	1,573,602
Newark, N. J.	246,070	285,815	285,815	18,908	79,411	616,071	288,324	400,000	1,302,369	1,884,841	1,573,602
Jersey City, N. J.	204,781	285,815	285,815	18,908	79,411	616,071	288,324	400,000	1,302,369	1,884,841	1,573,602
Louisville, Ky.	204,781	285,815	285,815	18,908	79,411	616,071	288,324	400,000	1,302,369	1,884,841	1,573,602
Minneapolis, Minn.	175,597	82,047	156,387	79,746	1,085,191	199,978	61,778	6,470	8,342	3,248,449	916,875
Providence, R. I.	169,164	169,164	169,164	7,431	218,768	90,792	2,042,848	610,713	10,360	2,704,487	2,940,000
Indianapolis, Ind.	169,164	169,164	169,164	7,431	218,768	90,792	2,042,848	610,713	10,360	2,704,487	2,940,000
Kansas City, Mo.	169,164	169,164	169,164	7,431	218,768	90,792	2,042,848	610,713	10,360	2,704,487	2,940,000
St. Paul, Minn.	169,164	169,164	169,164	7,431	218,768	90,792	2,042,848	610,713	10,360	2,704,487	2,940,000
Rochester, N. Y.	169,164	169,164	169,164	7,431	218,768	90,792	2,042,848	610,713	10,360	2,704,487	2,940,000
Denver, Colo.	169,164	169,164	169,164	7,431	218,768	90,792	2,042,848	610,713	10,360	2,704,487	2,940,000
Toledo, O.	131,522	292,730	486,638	790,777	277,763	387,519	12,423	419,606	419,606	1,455,648	1,700,000
Allegheeny, Pa.	129,896	60,000	38,938	1,609,274	402,275	481,189	65,941	648,350	648,350	2,830,398	6,000,000
Columbus, O.	129,896	60,000	38,938	1,609,274	402,275	481,189	65,941	648,350	648,350	2,830,398	6,000,000
Worcester, Mass.	118,421	310	280,920	4,060	1,680	484,338	98,400	1,500,000	142,906	2,376,730	286,640
Syracuse, N. Y.	108,874	8,816	14,900	165,487	36,899	68,518	984,798	817,190	142,906	1,198,144	2,700,000
New Haven, Conn.	108,027	32,000	108,027	36,899	36,899	87,990	984,798	817,190	142,906	1,198,144	2,700,000
Pasadena, N. J.	108,171	8,700	14,900	73,499	36,899	87,990	984,798	817,190	142,906	1,198,144	2,700,000
Fall River, Mass.	104,863	8,700	14,900	73,499	36,899	87,990	984,798	817,190	142,906	1,198,144	2,700,000
St. Joseph, Mo.	102,079	8,700	14,900	73,499	36,899	87,990	984,798	817,190	142,906	1,198,144	2,700,000
Omaha, Neb.	102,065	8,700	14,900	73,499	36,899	87,990	984,798	817,190	142,906	1,198,144	2,700,000
Los Angeles, Cal.	102,065	8,700	14,900	73,499	36,899	87,990	984,798	817,190	142,906	1,198,144	2,700,000
Memphis, Tenn.	102,065	8,700	14,900	73,499	36,899	87,990	984,798	817,190	142,906	1,198,144	2,700,000
Scranton, Pa.	102,065	8,700	14,900	73,499	36,899	87,990	984,798	817,190	142,906	1,198,144	2,700,000
Lowell, Mass.	94,990	8,700	14,900	73,499	36,899	87,990	984,798	817,190	142,906	1,198,144	2,700,000
Albany, N. Y.	94,151	8,700	14,900	73,499	36,899	87,990	984,798	817,190	142,906	1,198,144	2,700,000
Cambridge, Mass.	90,426	8,700	14,900	73,499	36,899	87,990	984,798	817,190	142,906	1,198,144	2,700,000
Portland, Ore.	89,978	8,700	14,900	73,499	36,899	87,990	984,798	817,190	142,906	1,198,144	2,700,000
Atlanta, Ga.	87,568	13,298	989,458	36,899	36,899	87,990	984,798	817,190	142,906	1,198,144	2,700,000
Grand Rapids, Mich.	85,883	8,700	14,900	73,499	36,899	87,990	984,798	817,190	142,906	1,198,144	2,700,000
Dayton, O.	85,883	8,700	14,900	73,499	36,899	87,990	984,798	817,190	142,906	1,198,144	2,700,000
Richmond, Va.	80,895	8,700	14,900	73,499	36,899	87,990	984,798	817,190	142,906	1,198,144	2,700,000
Seattle, Wash.	80,671	8,700	14,900	73,499	36,899	87,990	984,798	817,190	142,906	1,198,144	2,700,000
Hartford, Conn.	79,850	8,700	14,900	73,499	36,899	87,990	984,798	817,190	142,906	1,198,144	2,700,000
Reading, Pa.	79,961	8,700	14,900	73,499	36,899	87,990	984,798	817,190	142,906	1,198,144	2,700,000

sandstone, \$717,053; granite, \$385,101, and marble, \$139,506—in all, \$6,867,265. As a producer of limestone and slate Pennsylvania ranked first among the States.

Agriculture.—The following shows the production and value of the principal crops for the calendar year 1900: Corn, 32,707,900 bushels, \$14,718,555; wheat, 20,281,334 bushels, \$14,602,560; oats, 38,000,872 bushels, \$11,400,262; barley, 148,067 bushels, \$74,034; rye, 4,416,299 bushels, \$2,340,638; buckwheat, 3,188,402 bushels, \$1,753,621; potatoes, 10,921,748 bushels, \$5,788,526, and hay, 2,672,561 tons, \$37,148,598. Pennsylvania held first place among the States in the production of rye and second in the production of buckwheat. The estimated wool clip for 1900 was as follows: Number of sheep, 777,677; wool, washed and unwashed, 4,666,062 pounds; scoured wool, 2,333,031 pounds.

Industries.—The production of pig iron in 1899, according to the report of the Bureau of Industrial Statistics, amounted to 6,542,998 gross tons, more than half of which was manufactured in Allegheny County; Bessemer steel, 3,971,835 tons; open-hearth steel, 2,398,210 tons; crucible steel, 75,356 tons; steel by other processes, 758 tons; total production of steel, 6,466,159 gross tons. The output of iron and steel rolled into finished form was 7,093,485 net tons, of which Allegheny County produced 55 per cent. The total tin and terne plate manufactured was 165,542 net tons; wire nails, 2,919,645 kegs, and cut nails, 920,133 kegs. Pennsylvania easily outranks all the other States in the manufacture of pig iron and steel and their products. In 1899, 855 establishments, representing 93 different industries, reported to the Bureau of Labor Statistics as follows: Capital invested in plants and fixed working capital, \$245,877,826; value of basic material, \$169,586,637; market value of product, \$332,808,934; number of employees, 181,936; aggregate wages paid, \$78,680,725.

The expectation that the record-breaking production of coke in 1899 would be exceeded by the output in 1900 has been fully realized. In 1899 the Connelsville coke region reported 19,689 ovens and total shipments of 10,129,764 tons, valued at \$20,259,528. For 1900 the region reports a slightly higher tonnage (10,166,234 tons), with a gross value one-third greater than in the preceding year, or \$27,448,832. In 1899 there were 5402 manufacturers of cigars and 244 of tobacco, and their combined production for the calendar year was 1,412,657,274 cigars (the greatest number produced in any one State), 3,330,900 cigarettes, and 7,916,579 pounds of tobacco, chiefly smoking tobacco and snuff. The fruit and grain distilleries in operation during the fiscal year ending June 30, 1900, numbered 73, and the total amount of apple brandy produced was 8400 gallons; spirits rectified, 8,738,967 gallons; distilled spirits gauged, 29,566,704 gallons, and fermented liquors produced, 4,683,025 barrels, giving to Pennsylvania second rank as a producer of fermented liquors.

The statistics of cotton and wool manufacture for 1899 show 813 cotton and wool manufacturing establishments in the State; capital, \$57,493,103; power looms, 33,456; hand looms, 1788; spindles, 911,792; production of cotton, 180,441,351 pounds; production of wool, 172,795,284 pounds; value of combined production of cotton and wool, \$116,850,782. New textile mills established during 1900 include 9 cotton mills, with 3000 spindles and 1580 looms; 16 silk mills, 10 dyeing mills, and 1 finishing mill.

Commerce.—The following shows the foreign trade at the principal ports during the fiscal year ending June 30, 1900: Philadelphia, imports of gold, \$9257; silver, \$877; merchandise, \$51,866,002; exports of gold, \$5000; merchandise, \$78,406,031. Pittsburg, imports of merchandise, \$827,114. Erie, imports of merchandise, \$595,312; exports, \$35,848. The total imports of merchandise aggregated in value \$53,288,428; total exports of merchandise, \$78,441,879; total foreign trade, \$131,745,441, an increase of \$28,436,387 in a year.

Railroads.—With a total new railway construction during the calendar year 1900 of 276.99 miles, Pennsylvania ranked second among the States in this branch of railroad development. The aggregate mileage of the steam railways in the State is 10,400 miles.

The annual report of the railway commissioners for the year ending June 30, 1900, showed that 94 street railway companies in the State possessed capital stock aggregating \$103,176,121, an increase of \$53,802 in a year. The total mileage of street railway in 1900 was 1898.69, as against 1812.94 in the preceding year. There were 6395 street cars in operation, and the number of street railway employees was 14,798; 538,194,532 passengers were carried by the street railways during the year, an increase in a year of 64,881,274. The number of passengers killed was 28, or 1 to every 19,221,233 carried.

Banks.—On October 31, 1900, there were 478 national banks in operation and 78 in liquidation. The capital stock aggregated \$76,519,770; circulation outstanding, \$44,586,052; deposits, \$463,748,145, and reserve held, \$137,521,196. The State banks, May 17, 1900, numbered 95, and had capital, \$8,422,014; deposits, \$73,345,813, and resources, \$91,694,739; loan and trust companies, 97, with capital, \$39,809,778; deposits, \$160,259,761, and resources, \$234,182,504; and mutual savings banks, 14, with

depositors (estimated), 361,220; deposits, \$105,416,854, and resources, \$115,134,221. Private banks June 30, 1900, numbered 28, and had capital, \$965,005; deposits, \$7,406,101, and resources, \$8,792,337. Pennsylvania had 1174 building and loan associations in 1900 (more than any other State), with a total membership of 281,456 and total assets of \$112,120,436. During the fiscal year ending September 30, 1900, the exchanges at the clearing houses at Philadelphia, Pittsburg, and Scranton aggregated \$5,927,393,828, an increase of \$196,529,473 in a year.

Finances.—The balance in the State treasury December 1, 1899, was \$4,609,496; receipts during the fiscal year, \$17,494,211; total receipts plus balance, \$22,103,707; disbursements during the fiscal year, \$15,453,719; balance November 30, 1900, \$6,649,988. The total debt of the State is \$6,815,299; the unfunded debt amounts to \$134,149. The assessed valuations for 1900 were: Realty, including \$302,541,939 exempt from taxation, \$3,069,371,624; personal property, \$725,164,896; other property, \$36,590,997; total, \$3,831,127,517. The revenue from State taxes aggregated \$2,889,745.

National Guard.—The National Guard of Pennsylvania consists of 178 staff officers, 240 cavalry, 284 artillery, and 9334 infantry. The total number of militia authorized is 11,103. The State appropriations for military purposes aggregated \$350,000.

Forest Preserve.—Under legislative acts providing for State forestry reservations the State has acquired an aggregate of 97,962 acres of land at an average cost of \$1.35 per acre. The purchase of various other tracts of land has been authorized, which, if the title proves satisfactory, will increase the acreage owned by the State to 113,000 acres.

Education.—In 1899 the school population was (estimated) 1,765,000; enrolment in public schools, 1,186,146, and average daily attendance, 858,177. There were 28,829 teachers, 14,932 buildings used as schoolhouses, and public school property valued at \$49,491,586. The total school revenue was \$23,532,130, and expenditures, \$20,308,769, of which \$10,749,713 was for teachers' and superintendents' salaries. The average expenditure per pupil for the whole school year was \$23.66. There were 302 public high schools, with 1094 teachers and 29,439 secondary students; 131 private secondary schools, with 827 teachers and 10,029 secondary students; 15 public normal schools, with 312 teachers and 7726 students in normal courses, and 4 private ones, with 29 teachers and 644 students in normal courses. Thirty-four universities and colleges for men and for both sexes reported 682 professors and instructors, 8793 students in all departments, and a total income of \$1,626,072; and 8 colleges and seminaries for women, with 171 professors and instructors, 1288 students in all departments and a total income of \$301,175. The professional schools comprised 17 theological schools, with 109 instructors and 792 students; 4 law schools, with 39 instructors and 587 students, and 6 medical schools, with 261 instructors and 2505 students.

Population.—The population, according to the United States census, was 5,258,014 in 1890 and 6,302,115 in 1900. The increase was 1,044,101, or 19.9 per cent., the largest numerical increase reported for any decade. The five largest cities, with population in 1900, are: Philadelphia (the third largest city in the United States), 1,293,697; Pittsburg, 321,616; Allegheny, 129,896; Scranton, 102,026, and Reading, 78,961.

Convention of Third-class Cities.—On May 15 a convention, consisting of delegates from cities of between 10,000 and 100,000 inhabitants in Pennsylvania met at York for the purpose of discussing advisable amendments to the Corporation act of the State, under which the cities represented were equally classed as "cities of the third class." Considerable difficulty had been experienced in the government of a number of the twenty-five cities so classed, mainly because the identical organization prescribed for them was too simple for the larger ones and too complex for the smaller ones. It was thought that united recommendations by the cities interested would result in favorable action by the Legislature, which meets in 1901. Among important recommendations considered by the convention, all but one of which referred to good government in cities of whatever size, were the following: 1. To place cities of over 250,000 inhabitants in the first class, those between 250,000 and 50,000 in the second class, those under 50,000 in the third class. 2. To do away with two branches or chambers in municipal assemblies, one being considered enough. 3. To permit the mayor to make appointments without the advice and consent of the councils. 4. To increase the power of the city comptroller. 5. To grant franchises to corporations for twenty-five years only and upon the condition that they make statements in accordance with forms prepared by the comptroller and that they make returns to the city on the basis of their gross receipts.

Coal-mine Strike in Pennsylvania.—On September 12, 1900, the president and secretary of the United Mine Workers of America, by the power delegated to them by the national executive board of the association, ordered a strike in the anthracite

coal region of Pennsylvania, to take effect on September 17. This action was, in effect, an endorsement of the request made upon the United Mine Workers by the local miners at their convention held at Hazelton, Penn., August 27, 1900, for permission to strike in accordance with the laws of the organization. The demands made by the anthracite coal miners were principally as follows: 1. The abolishment of stores controlled or owned by the operators, in which prices are higher than ruling market rates, and with which the miners are obliged or expected to trade. 2. The abolishment of company doctors, forced upon the miners as their physicians and supported by deductions from every miner's monthly wage. 3. A reduction in the price of powder from \$2.75 to \$1.50 a keg, which latter price is still above the market value. 4. Semi-monthly payments in accordance with the laws of Pennsylvania. 5. A legal ton of 2240 pounds, instead of requiring the miners to consider from 3000 to 4000 pounds as a ton. 6. An equitable system of dockage and check weights. 7. An advance of 20 per cent. to men receiving less than \$1.50 per day; an advance of 15 per cent. to men receiving between \$1.50 and \$1.75 per day; an advance of 10 per cent. to men receiving more than \$1.75 per day. That some of the demands of the miners were based on real grievances, at least if taken by themselves and unmodified by other circumstances seemed evident. For example, it appeared that the powder sold by the anthracite companies for \$2.75 a keg was sold by the bituminous companies, at a profit, for \$1.25 a keg. Again, not only were the miners required to overload their cars, but a "boss" employed by the company judged how much dirt and slate there was in each car and docked the miner therefor. Whether or not it might work well in practice, the request of the miners that a paid representative of their own should also inspect the cars was a just demand. Further, the miners received no pay for coal under "nut" size, but they dug out the undersized coal, and the companies sold it. The main cause of these extortions, great and small, was stated by President Mitchell of the United Mine Workers to lie in the charges exacted by the transporting railway companies, which companies own about 70 per cent. of the anthracite coal fields. In this connection the correspondent of a prominent magazine remarked: "By charging for the shipment of hard coal three times as much as railroads usually charge to ship soft coal, the roads make it impossible for any of the operators to grant their employees the advances which the union has secured for the soft coal miners in the West. The charge for hauling anthracite could be reduced one-half and still leave an excessive margin. The reduction of one-half would mean 70 cents a ton to be divided between producers and consumers." In answer to the demands of the miners the operators said they were willing at any time to discuss grievances with their employees, but that they did not care to recognize the outside interference of the miners' union. Upon this question both sides stood firm, the miners claiming that unless backed by the union their demands would not be granted, while their delegates and leaders would be placed in jeopardy of their positions. So the strike was ordered. The number of men who went out, comparatively few at first, increased until it was estimated that over one hundred and thirty thousand were idle. There was comparatively little disorder. The most noteworthy matter incidental to the strike was the breaking of their arbitration agreement by the employees of G. B. Markle & Company. This company had for fifteen years an agreement with its men providing that all grievances should be first presented to the company for redress, and if not then adjusted, they should be submitted to arbitration, the miners continuing at work pending the final decision. When the strike broke out G. B. Markle & Company agreed to grant certain of the demands made and urged the miners to stick to their agreement and arbitrate the rest, the decision of the arbitrators to be binding upon both parties. The union claimed, however, that if this were done the strike would be handicapped in other quarters, and that it was the duty of all the anthracite miners to stand or fall together. Therefore, the G. B. Markle men—some 2800 in number—formally repudiated their agreement and went out on strike. It was admitted that the company had given good wages, had been on friendly terms with its employees, and had acted fairly in the matter of schools, houses, and company stores. For these reasons the breakdown of the agreement of arbitration at the crucial moment was generally considered as having a discouraging influence upon the principle of holding men by equitable and even generous methods. After the strike was initiated throughout the anthracite region the companies began one by one to post notices, agreeing to an advance of 10 per cent. in wages. This led on October 12 to a convention of miners' delegates, at which, by advice of President Mitchell, it was voted that "the convention accept an advance of 10 per cent., providing the operators will continue its payment until April 1, 1901, and will abolish the sliding scale in the Lehigh and Schuylkill regions, and that the companies will agree to adjust other grievances complained of with committees of their own employees." By the last clause of this resolution it will be seen that the question of the official recognition of the Miners' Union by the operators was waived. After replies to this resolution had been

received from the operators President Mitchell on October 26 directed the miners to return to work on October 29. In his statement he said in effect that the companies had, with few exceptions, agreed to the scale of wages formulated by the miners' convention of October 12; that in the Schuylkill and Lehigh regions the largest companies had agreed to the suspension of the sliding scale, and that the companies had agreed to discuss with their men all grievances complained of. In reference to those companies which had not made concessions to the miners, the men were advised to remain on strike until such concessions were made. Before October 29, however, practically every company had posted notice of the required increase in wages.

Matthew S. Quay.—On April 24, 1900, the United States Senate, by a vote of 33 to 32, declined to admit Matthew Stanley Quay to the Senate, upon the appointment of Governor Stone, of Pennsylvania. The Legislature of Pennsylvania had, in 1899, after a deadlock extending through many weeks, adjourned without the election of a successor to Mr. Quay, whose term had expired. Governor Stone had thereupon appointed Mr. Quay to succeed himself and to fill the vacancy which the inaction of the Legislature had brought about. Governor Stone claimed that he was affirmatively authorized in this appointment by the Constitution of the United States, and that no section of the constitution of Pennsylvania debarred him from so acting. The clause of the Pennsylvania constitution which bears upon the subject makes it the duty of the executive, when vacancies occur in the State's senatorial representation during a recess of the Legislature, to call together the Legislature to act thereon. In the case of Mr. Quay, Governor Stone contended that this clause of the State constitution did not apply, since the vacancy had occurred, not during a recess, but during a session of the Legislature. To prove that he was affirmatively authorized to appoint Mr. Quay to the Senate, Governor Stone and the friends of Mr. Quay referred to Act 1, Sec. III., of the Constitution of the United States which states that: "The Senate of the United States shall be composed of two Senators from each State, chosen by the Legislature thereof . . . and if vacancies happen by resignation or otherwise during the recess of the Legislature of any State, the executive thereof may make temporary appointments until the next meeting of the Legislature, which shall then fill such vacancies." The opposition drew attention to the lapse of logic between Stone's contention that the senatorial vacancy had occurred during the session of the Legislature and the plain language of the United States Constitution, which permitted the governor to fill only such vacancies as occurred during the recess of the State Legislature. In the United States Senate the question of seating Mr. Quay upon Governor Stone's appointment was referred to the committee on Elections and Privileges, and Attorney-General Elkins, of Pennsylvania, appeared for Mr. Quay. On January 23 the committee reported to the Senate their findings in the case. The majority report, signed by Senators Caffery, Pettus, Turley, Harris, and Burrows, recommended that Mr. Quay be not seated for the following main reasons: 1. The unmistakable language of the Constitution limits the appointive power of the State executive to vacancies which occur during a recess of the Legislature: "And this of itself would be decisive against Mr. Quay's claim." 2. The language of the Constitution, and the times and political conditions of its framing, renders it evident that senators were intended by the Constitution to be in all cases elected in the first instance by the Legislature, and that only when because of death, resignation, and similar causes such elections were futile was the State executive intended to use his appointive power. 3. Every contingency which might occur under a State government exercising its proper and normal functions was provided for by the federal constitution to the end that the "real representatives of their respective States" might be always in their place in the Senate. But the Constitution did not provide for the failure of the State Legislature "to perform its sworn duty," and did not intend to so provide. 4. The action of the Senate in similar or identical cases, from the case of Kensey Johns, of Delaware, in 1794, to that of Henry W. Corbett, of Oregon, in 1898, shows that never, since the foundation of the government, has the Senate recognized the right of a State executive "to make a temporary appointment even where the vacancy happened or occurred during a recess of the Legislature if the Legislature prior to the date of the appointment had had an opportunity to fill it." 5. The final conclusion is that any appointment which the Legislature could have filled the governor cannot fill. And this conclusion results fatally to the claims of Mr. Quay.

The minority report, signed by Senators Hoar, Chandler, Pritchard, and McComas, advocated that Mr. Quay be seated. Among the arguments advanced were these: 1. The constitutional convention hesitated in the beginning between conferring the power of appointing senators upon the executive and upon the Legislature. The executive, like the Legislature, was supposed to represent the will of the people, and there is no reason to suppose that the framers of the Constitution considered the State executive unsuited for the appointment of senators. 2. It is un-

reasonable to suppose that a distinction is purposely drawn in the Constitution between senatorial vacancies which occur in one way or at one time and those which occur in another way or at another time. For senatorial representation may be equally at any time of immense importance to the State to be represented. In the interests of the whole people the Constitution provided that each State might always be fully represented in the Senate. 3. In a Democratic Legislature, electing by majority vote, no fault can be imputed if difference of opinion prevents the election of a candidate. Nor is it the sworn duty of the Legislature to elect a candidate, but only for each member thereof to vote as he thinks right. 4. In certain previous cases, now quoted as precedents for the Senate's unfavorable action in the present case, other and grave matters had so driven the Senators into partisan camps that dispassionate judgment was difficult to attain to, and hence the authority of the precedents then established is by so much the less. And in any event a precedent should not be allowed to stand whose effect is to deprive States of their representation for long periods of time, in derogation of their just rights, and in violation of the intent of the framers of the Constitution. On February 23, a month after the report of the Committee on Privileges and Elections, it was voted by the Senate to take up the case. Constitutional arguments of every length and degree of complexity were presented by various senators pro and con. The chief argument of those favoring Mr. Quay was that the Constitution contemplated full representation from each State; the chief argument against him was that his admission would tend to shift senatorial election from the Legislature, and hence the people, to a partisan governor. It was incidentally pointed out that in 1898 both Mr. Penrose (Pennsylvania) and Mr. Quay had voted against the admission of Mr. Corbett, of Oregon, upon appointment of the governor of that State. Popular opinion generally conceded that Mr. Quay would be at length seated, as he had many and close friends in the Senate. Later it was stated that his managers were alienating votes by "holding up" such administration measures as the "Ship Subsidy Bill" pending a favorable decision upon Mr. Quay's claims. On April 24 the matter came to a vote, and Mr. Quay was declared not seated. The vote was not to a large extent along party lines. On the following day the Republican State Convention, of Pennsylvania, then in session, deplored the "unconstitutional" act of the Senate, endorsed Attorney-General Elkins's defence of Mr. Quay, and declared that Mr. Quay should stand for re-election to the Senate by the Legislature.

Elections.—At the State election, 1898, William A. Stone, the Republican candidate, was elected by a plurality of 118,006 votes. The elections in 1900 resulted in twelve changes in the congressional representation, eleven in districts, and one at large. In the third district, Henry Burke (Rep.) was elected to succeed William McAleer (Dem.); in the fifth district, Edward Morrell (Rep.) to succeed A. C. Harmer (Rep.); in the eighth district, Howard Mutchler (Dem.) to succeed L. H. Barbar (Dem.); in the ninth district, Henry D. Green (Dem.) to succeed Henry D. Green (Dem.), appointed for the unexpired term of Daniel Ermentrout (Dem.), who died September 17, 1899; in the twelfth district, Henry W. Palmer (Rep.) to succeed S. W. Davenport (Dem.); in the thirteenth district, George R. Patterson (Rep.) to succeed J. W. Ryan (Dem.); in the sixteenth district, Elias Deemer (Rep.) to succeed H. B. Packer (Rep.); in the nineteenth district, R. J. Lewis (Rep.) to succeed E. D. Ziegler (Dem.); in the twentieth district, Alvin Evans (Rep.) to succeed J. E. Thropp (Rep.); in the twenty-sixth district, Arthur L. Bates (Rep.) to succeed A. Gaston (Dem.); in the twenty-seventh district, J. C. Sibley, who had served as Republican representative in the 56th Congress, was elected to the 57th Congress as the Democratic representative of that district. The change in representatives at large was R. G. Foederer, Jr. (Rep.), in the place of S. A. Davenport (Rep.).

The State Legislature in 1900 consisted, in the Senate, of 37 Republicans, 13 Democrats, and in the House, of 127 Republicans, 71 Democrats, and 6 Fusionists. In 1901 the Legislature will consist of 37 Republicans and 13 Democrats in the Senate, and 151 Republicans, 49 Democrats, and 4 Fusionists in the House.

In the national election McKinley received 712,655 votes and Bryan received 424,232 votes. In 1896 McKinley received 728,300, and Bryan 433,230 votes. Thus McKinley lost in plurality from 295,070 in 1896 to 288,433 in 1900.

State Officers and National Representatives.—State officers for 1900: Executive—governor, William A. Stone; lieutenant-governor, J. P. S. Gobin; secretary of the commonwealth, W. W. Griest; treasurer, James S. Beacom; auditor-general, L. G. McCauley; adjutant-general, T. J. Stewart; attorney-general, J. P. Elkin; superintendent of public instruction, N. C. Schaeffer; insurance commissioner, I. W. Durham; commissioner of banking, T. J. Powers—all Republicans except Schaeffer (Dem.).

Supreme Court: Chief justice, J. P. Sterrett; associate justices, Henry Green, J. H. Brown, J. T. Mitchell, J. B. McCullom, John Dean, D. N. Fell; prothonotaries,

eastern district, C. S. Greene; middle district, William Pearson—all Republicans except Justice McCullom (Dem.).

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Supreme Court: Chief justice, J. B. McCullom; associate justices, J. H. Brown, J. T. Mitchell, W. P. Potter, John Dean, D. N. Fell, and S. L. Mestrezat; prothonotaries, eastern district, C. S. Greene; middle district, William Pearson; western district, George Pearson—all Republicans except McCullom and Mestrezat, Democrats.

Congressional representatives for 1900 (56th Congress): Republicans (20), G. A. Grow (Glenwood), S. A. Davenport, H. H. Bingham (Philadelphia), Robert Adams, Jr. (Philadelphia), J. R. Young (Philadelphia), A. C. Harmer, T. S. Butler (West Chester), I. P. Wanger (Norristown), M. Brosius (Lancaster), William Connell (Scranton), M. E. Olmstead (Harrisburg), C. F. Wright (Susquehanna), H. B. Packer (Wellsboro), T. M. Mahon (Chambersburg), J. E. Thropp (Everett), S. M. Jack (Indiana), J. M. Dalzell (Pittsburg), W. H. Graham (Allegheny), E. F. Acheson (Washington), J. B. Showalter (Chicora); Democrats (8), W. McAleer, L. H. Barbar (Mauch Chunk), H. D. Green (Reading), S. W. Davenport, J. W. Ryan, R. K. Polk (Danville), E. P. Ziegler, A. Gaston, J. C. Sibley (Franklin), and J. K. P. Hall (Ridgway).

Congressional representatives for 1901 (57th Congress): Same as for 1900 except that R. H. Foederer, Jr. (Philadelphia), Henry Burke (Philadelphia), E. de V. Morrell (Philadelphia), H. Mutchler (Easton), H. W. Palmer (Wilkesbarre), G. R. Patterson (Ashland), Elias Deemer (Williamsport), R. J. Lewis (York), A. Evans (Ebensburg), and A. L. Bates (Meadville)—all Republicans except Mutchler—replace respectively Davenport, McAleer, Harmer, Barbar, S. W. Davenport, J. W. Ryan, Packer, Ziegler, Thropp, and Gaston. Republicans, 26; Democrats, 4.

Senator for 1900 (56th Congress): Boies Penrose (until 1903), from Philadelphia (Rep.).

Senators for 1901 (57th Congress): Boies Penrose (Rep.), from Philadelphia; vacant.

PENNSYLVANIA, UNIVERSITY OF, Philadelphia, Penn., chartered 1875. An important event of the year was the purchase of 110,000 square feet of property, containing important buildings, between Thirty-third, Thirty-fourth, and Locust streets, Philadelphia, for \$112,500. A gift of \$250,000 had already been made for a new physical laboratory, and this building will be established upon the western half of this property. The eastern end of the lot has been reserved, for the time being, for a university gymnasium, for which alumni are endeavoring to raise money. On February 21-22 was dedicated the new building of the law department, which is not only a building of great beauty, but is the largest one in the country to be devoted exclusively to the study of the law. In the early half of the college year, on December 28, 1899, the new Museum of Science and Art was formally opened, and on this occasion a gift of \$50,000 was presented by Mrs. William Pepper as an endowment of "William Pepper Hall," in honor of the late provost of the university. On February 13 the cornerstone of the Memorial Tower and Gateway in honor of Pennsylvania participants in the Spanish War was laid. This structure and new dormitories have since been completed, the latter at a cost, including furnishing, of about \$240,000, making the total cost of dormitories thus far built over \$600,000, with room for 525 students. The entire dormitory plan includes a university chapel, university dining-hall, and additional dormitories, with a final accommodation for 1000 students. The cash receipts in gifts during the twelve months ending August 31, 1900, were \$531,154.39. According to the treasurer's report of August 31, 1900, the property of the university, including real estate, library, and other statistics, securities, etc., amounted to \$7,970,648.65; obligations, \$518,644.20; balance, \$7,452,004.45. The additions to the library for the year ending August 31 were 8737 volumes, of which 2971 were gifts, making the total collection 200,000 volumes and about 50,000 pamphlets.

One of the most important results of the university's work during the year was the remarkable discoveries made at Nippur, in Babylonia, under Professor Hilprecht. (See *ARCHÆOLOGY*, paragraph Babylonia.) During this last expedition to the lower Euphrates the library of the Great Temple was discovered, from which 19,000 inscribed tablets were taken, while a great palace, dating about 4000 B.C., was unearthed. The ethnological collections were much enriched through the field work carried on in the Naga Hills of Assam, and among the Indian tribes of the North-

west. One of the most important changes in matters of curriculum was a readjustment of courses in the college and the medical school. The former now recognizes educational value in studies of the first year of the medical school, and the latter recognizes professional value in certain studies of the senior year of the college, making it possible for a student, under certain conditions, to be simultaneously a senior in the college and a first-year student in the medical school. The provost states it as "no sacrifice of principle, only a recognition of patent facts, and a saving of time for the college student intending to take up medicine, while giving added opportunity for prospective medical students to first gain a liberal education in the college. No medical students will hereafter be allowed to take less than a four years' course. A new four-year course in commerce and industry was established, leading to the degree of B.S. in Economics, and the course in music was lengthened to four years. Statistics of the year show a faculty of 265, and a student attendance, deducting duplicated names, of 2573, distributed as follows: College, 968; department of philosophy (graduate students), 172; law, 312; medicine, 682; laboratory of hygiene, 19; dentistry, 484; veterinary medicine, 46. There was a decrease of 117 students, almost entirely in the medical department, due to increased entrance requirements. On June 13, 551 degrees were granted, including two honorary degrees.

PENSIONS. The report of the commissioner of pensions for the year ending June 30, 1900, shows a total enrolment of 993,529 pensioners, an increase over the preceding year of 2010. New names were added to the number of 45,344; of these, 40,645 were allowed on original application and 4699 were restored to the rolls. Of the 43,334 names dropped from the pension list, 35,809 were on account of death. There were pending on June 30, 1900, 437,104 claims of all classes. Of these, 259,479 were claims for increase, restoration, and reissue, and 21,635 were claims for accrued pensions. On account of the war with Spain 28,387 claims had been filed, of which number 13,960 were filed within the year. The total amount disbursed as first payments for the year was \$9,828,525.07, being \$580,568.32 in excess of first payments made during the previous year; besides this there were allowed unpaid first payments to the amount of \$1,291,588.58. The large amount due on these first payments is owing to accrued arrears of pensions, which often come to thousands of dollars in each case. For pensions on account of the war with Spain, \$322,905.25 was disbursed during the year. It was believed that with the settlement of this class of claims the amount of payments would increase largely from year to year. At the first session of the 56th Congress 684 special pension acts were passed, whose monthly value was \$9813.25, and their yearly value, \$117,759. On June 30, 1900, there were on the rolls 4 widows of Revolutionary soldiers and 7 daughters pensioned by special act. There was also one surviving soldier of the War of 1812, Hiram Cronk, of Oneida County, N. Y., who was 100 years old.

Pension Legislation.—Three legislative acts relating to claims for pensions were passed by Congress during 1900. By an act of April 18 persons who aided the Confederate cause in the war of the rebellion were permitted, if destitute, to claim pensions, provided that their sons died from causes resulting from service in the army or navy in the war with Spain. By an act of April 23 the benefits given by an act of 1893 were extended to persons granted pensions subsequent to that date: for the act of 1893 limited its provisions to those whose names were then on the rolls. This amendatory act granted increase of pension up to a total pension of \$12 a month to survivors of the Mexican War who might become entirely destitute or disabled. On May 9, in accordance with the recommendation of the President, an act was approved providing for the pensioning of widows whose yearly income, independent of their labor, was less than \$250, instead of less than \$96, as previously. In his annual message of December, 1900, the President stated that, in the opinion of the secretary of the interior, the operation of this act would increase the payment for pensions by from \$3,000,000 to \$4,000,000 annually. Since the platforms of both the Republican and Democratic parties (see **PRESIDENTIAL CAMPAIGN**) advocated the continued payment of liberal pensions, it appeared that no movement looking toward the reduction of pensions was likely to occur in the near future. At the present time, as stated by the commissioner of pensions, "about 40 per cent. of the revenue of the government in time of peace is applied to the payment of pensions." In his annual report the commissioner of pensions again recommended that Congress appoint a commission to codify the general and special laws relating to pensions, and to so modify them as to effect a uniform system and practice. The commissioner also urged the repeal of an act of 1888, which provided that widows of soldiers and sailors might at any time make application for pensions, and that payment on those pensions should commence from the date of the husband's death. The commissioner pointed out that the pensions of soldiers themselves began from the date of filing claim, and that the act of 1888 in favor of widows was a direct incentive to fraud and crime. Legislation was also recommended to more thoroughly protect minors, and weak-minded and

indigent persons in receipt of pensions from their "friends." The records showed "that this character of 'friendship' cost those pensioners who could least afford it from 5 to 50 per cent. of their pensions." A thorough revision of the roster of attorneys entitled to appear before the Bureau of Pensions was recommended, in order that unscrupulous lawyers, who necessarily prejudiced the claims of honest clients, might be debarred. Of 983 attorneys whose record was looked up by the department during the year, 23 per cent. were found to be "not good." Attorneys to the number of 387 were disqualified during the year, and 1100 were admitted. On June 30, 19,216 attorneys were entitled to recognition as practitioners. At the close of the fiscal year 296 cases for criminal attempts to obtain pensions were pending. During the year 224 cases were disposed of by trial, resulting in 205 convictions and 19 acquittals.

The following table shows the disbursements for pensions and for expenses connected with the maintenance of the Pension Bureau for the years 1899 and 1900, and also shows the total disbursements for pensions since 1790. It will be noted that the total pension payments from 1790 to 1865 aggregated but little more than two-thirds of the sum which is at present paid out yearly.

	Disbursements for army and navy pensions.	Expenses con- nected with Pension Bureau.	Total.
For the fiscal year of 1899.....	\$138,356,052.95	\$4,147,517.73	\$142,502,570.68
For the fiscal year of 1900.....	138,462,180.65	3,841,706.74	142,303,887.39
From July 1, 1790, to June 30, 1865.....	96,445,444.23		96,445,444.23
From July 1, 1865, to June 30, 1900.....	2,528,373,105.89	83,964,543.52 *	2,612,337,649.41
From July 1, 1790, to June 30, 1900.....	2,634,818,549.62		2,706,773,093.14

* Approximate: too low.

For the fiscal year ending June 30, 1902, the secretary of the interior asks for pensions, \$145,245,230, thus showing that a considerable increase of expenditure is anticipated on account of the Spanish War, and on account of the congressional act of May 9, 1900, noted above.

PEOPLE'S CHORAL UNION, an association of singers, organized in 1894 in New York City, with Frank Damrosch as director, had in 1899 a membership of 1880. President, John McDonough; secretary, James D. Gagan, 405 West Fiftieth Street, New York City.

PEREZ, SANTIAGO, former president of the republic of Colombia, died August 11, 1900. After his term of office expired in 1875 he was for four years minister to the United States from Colombia. Eight years ago he was exiled by President Caro for the expression of liberal ideas, and his estate was confiscated by the conservative government. Perez was a well-known orator and an authority on international law.

PERSIA, an independent Asiatic monarchy, called Iran by the natives, lies between Asiatic Turkey on the west and Afghanistan and Baluchistan on the east; to the north are Russian territory and the Caspian Sea, and to the south are the Persian Gulf and the Gulf of Oman. The capital is Teheran.

Area, Population, etc.—Persia extends about 900 miles from east to west and 700 miles from north to south, the total estimated area being some 628,000 square miles, or about three times the area of Germany. A large part of this territory is desert. The total population is estimated at about 9,000,000. Of the rural inhabitants, probably 2,000,000 are nomadic Turks, Kurds, Leks, Arabs, Lurs, Baluchis, and Gypsies. It is said that the number of resident Europeans does not exceed 800. The approximate populations of the more important cities are stated as follows: Teheran, 210,000; Tabriz, 180,000; Ispahan, 80,000; Meshed, 60,000; Barfurush, 50,000; Yezd and Kerman, each upward of 40,000, and Korn, Kazvin, Shiraz, Hamadan, Resht, and Kashan, each upward of 25,000. The great mass of the inhabitants (about 8,000,000) belong to the Shiah sect of the Mohammedans; there are about 800,000 Sunnis and comparatively small numbers of Jews and Christian Armenians and Nestorians. Instruction is provided by private tutors, primary schools, and many higher schools, receiving state aid. The majority of the people who receive any instruction at all learn only to read the Koran; further education includes Persian and Arabic literature, religion, and some science.

Government.—The shah, or king, of Persia, who to a considerable extent exercises his powers through a responsible ministry, is an absolute monarch so far as his rulings do not conflict with the principles of the Koran. The present shah is Muzaffar-ed-din, who was born March 25, 1853, and succeeded his father to the

throne May 1, 1896. The thirty-three provinces of the country are administered by governors-general, responsible to the shah. Justice, which is always summary, is administered by these governors and their representatives, by priests and by the city judges, known as the Sheikhs-el-Islam. The Persian army, of which only one-half is liable to service, is reported to number 105,500 men; the standing army does not exceed 24,500 men in number.

Finance.—About four-fifths of the revenue is derived from assessments on the towns and districts of the country. This taxation falls chiefly on the poorer classes. About 15 per cent. of the revenue accrues from customs. It is stated that the largest items of expenditure are for the army and pensions. For the fiscal year 1900 the revenue was estimated at less than \$7,300,000; in 1898 the estimated expenditure amounted to \$4,008,000. The revenue is at the disposal of the shah, whose private fortune is said to amount to a sum between \$19,000,000 and \$24,000,000.

On January 30, 1900, it was announced that the Russian government had allowed the Russian Loan Bank of Persia at Teheran to take up a loan of 22,500,000 roubles gold (\$11,587,500), issued by the Persian government at 5 per cent. Although the transaction was nominally private, the fact that the Russian government stands behind the Loan Bank practically made the loan, which is designated the 5-per-cent. Persian gold loan of 1900, a Russian one. The contract provides for the payment of interest, and amortization of principal is guaranteed in the course of seventy-five years by a lien on all the Persian customs, except those of the Persian Gulf and the province of Fars. The bank was empowered to place on the market, if it so desire, bonds covering the balance of the loan, which bonds shall have the full guaranty of the Russian government. It was stipulated that before the redemption of this loan the Persian government, without the consent of the bank, should conclude no other foreign loan, and that the loan should be used in payment of all foreign obligations previously incurred. It was this last clause, looking in particular to the redemption of the 6-per-cent. English gold loan of 1892, that called forth in some quarters the expression of opinion that in large measure the loan of 1900 had been effected by the Russian government for the purpose of supplanting English influence by Russian in Persia. It must be remembered, however, that the customs of the territory already under English influence—namely, the coast of the Persian Gulf—were not included in the lien, while for some time in the north of Persia Russian commercial influence has been in the ascendancy. It was announced late in February, 1900, that the Imperial Bank of Russia had despatched to London 5,000,000 roubles in payment of the Persian loan of 1892; in consequence, Great Britain ceased to have the hypothecation of the customs of Farsistan and of the coast of the Persian Gulf. It was soon recognized that the dominant influence at the Persian court was Russian, and the report obtained that the position of the grand vizier, formerly a friend of England, was distinctly anti-British.

Industry, Commerce, etc.—The principal products of Persia include wheat, barley, rice, gums, fruits, cotton, sugar, opium, and tobacco. The mineral resources are considerable, but hitherto, on account of inadequate means of transportation, they have been little developed. The minerals include salt, iron, coal, copper, lead, antimony, manganese, tin, nickel, sulphur, and borax; turquoises and some other precious stones occur. The most important manufacture is that of silk; carpet-making is also a prominent industry. The principal exports are cotton, wool, tobacco, opium, dried fruits, silk, and carpets; the leading imports include cotton and woollen textiles, sugar, tea, coffee, drugs, petroleum, hardware, glass, and carriages. The United States consul-general at Teheran estimated that the whole volume of trade in 1899 amounted to about \$40,000,000, two-thirds of which represented imports. "Additions, however," he said, "may be made to these figures, as goods are passed over the frontiers outside the great caravan highways, and, consequently, do not appear in the ordinary trade returns." In the southern part of Persia commerce to a great extent is in the hands of British merchants, while in the northern part of the country Russian traders are in predominance. In 1899 the direct imports from Great Britain amounted to £368,165, and the direct exports to that country, £148,027.

Communications.—The only railway in operation in Persia is controlled by a Belgian company. The line is but six miles in length, connecting Teheran with Shah Abdul-azim. Transportation is effected chiefly by pack mules and camels. The only regular wagon roads in the country are from Teheran to Kom and from Teheran to Kazvin, each being about 90 miles in length. There are about 4150 miles of telegraph line (6700 miles of wire) and 95 stations. There are less than 90 post-offices.

In February, 1900, it was announced that the Russian government, in agreement with the government of Persia, had determined to construct a railway through Persia from the northwest to the southeast, starting at Tabriz, in Azerbaijan, and running through Hamadan (a branch line extending from this town 185 miles

northeast to Teheran) and Julfa (a suburb of Ispahan) and terminating at Bander Abbas, on the Strait of Ormuz. The object of the road is to augment Russian influence in Persia and obtain for Russia an outlet to the Arabian Sea. Care will be taken to preclude a possible benefit to Turkey; and, accordingly, there will be, it is said, no rail communication with the Tigris or with Bushire. It was hoped that the road would be completed in 1903.

History.—In December, 1900, it was reported that the Russian government had decided to establish in Persia several new consulates, vice-consulates, and consular agencies, and that a number of appointments to towns in southern Persia had already been made. It was also stated that Russia had opened negotiations looking to the increase, probably the doubling, of the Cossack forces on the Persian frontier. These incidents, together with Russia's financial and commercial policy, were regarded as indicative of her plan to dominate Persia to the exclusion or minimizing of British influence. At the close of the year it was announced that a regular line of Russian steamers would be established between Odessa and the Persian Gulf in March, 1901, and that Russian trade would be openly and actively encouraged in southern Persia.

PERU, a republic on the Pacific coast of South America between Ecuador and Chile. The capital is Lima.

Area and Population.—The republic comprises eighteen departments and two littoral provinces, the total estimated area of which is 1,769,804 square kilometres (683,130 square miles). This does not include the province of Tacna (12,500 square miles), ceded provisionally to Chile. According to the official estimate of 1896, the population is 4,609,999, exclusive of many uncivilized Indians, whose number is not known. An estimate—little better than a guess—places their number at 350,000. More than one-half of the inhabitants are said to be of Peruvian (Indian) blood, nearly one-fourth of mixed race, and about one-fifth of Spanish descent. Europeans in Peru number about 18,000 and Chinese nearly 25,000. Approximate populations of the principal cities have been reported as follows: Lima, 113,000; Arequipa, 35,000; Callao, 29,000; Catacaos, 25,000; Ayachuco and Cuzco, each 20,000; Cincha, 18,000; Iquitos, 12,000; Huancavelica, 5000; Huanuco, 4000; Mollendo, 3000.

The final disposition of Tacna, including Arica, which was formerly a Peruvian department, but which since the war of 1883 has been under the sovereignty of Chile, was, according to the treaty of Ancon, to have been decided by a plebiscite in that department in 1894. But Chile has steadily refused to authorize such a referendum, and in 1900 intimated her intention to make her hold on Tacna and Arica permanent. The attitude of Chile is causing some apprehension in Argentina, where it is feared that the former country may pursue the same policy of disregard with Argentine treaties, and when an opportune time arrives lay forcible claim to Puna de Atacama and the disputed valleys of the southern Andes. It was reported in the summer of 1900 that, in order to obtain favorable American influence in her dispute with Chile over Tacna, Peru had offered the United States a coaling station on the Pacific.

Government.—The constitution, which is based on that of the United States, vests the chief executive authority in a president, who is elected by popular vote for four years, is not eligible for the ensuing term, and is assisted by a cabinet of six members. The legislative power devolves upon a congress consisting of a senate and a house of representatives. Senators represent the provinces in the congress, there being two senators from each department containing two provinces and one more senator for each additional two provinces in a department. Representatives are elected in the proportion of one for each 30,000 inhabitants or fraction thereof over 15,000. The departments and the two littoral provinces are administered by prefects, the provinces (subdivisions of the departments) by sub-prefects, and the districts (subdivisions of the provinces) by governors.

The president in 1900 was Señor Eduardo Lopez de Romana, who was inaugurated in September, 1899. He is the second civilian president of Peru, a civil engineer who until recently has taken little interest in politics, and who, it is said, did not seek the presidency. His home is in Arequipa, an old, unprogressive, conservative university town.

Army and Navy.—The peace footing of the regular army, which comprises infantry, cavalry, and artillery, amounts to 3075 officers and men. The navy is unimportant, comprising ten small vessels of little value, a screw steamer, and a cruiser of 1700 tons.

Finance.—The adoption of the gold monetary standard was effected by two Spanish-American governments in 1900—Costa Rica and Peru. In April, 1897, a movement was begun in the latter country, and the coinage of silver was suspended and the importation of silver specie prohibited. In 1899 the government designated as the monetary unit the gold libra, of the same weight, fineness, and value as the English pound sterling (\$4.8665), and in October, 1900, the Peruvian congress declared the value of the silver sol, the former standard of value, to be one-tenth that

of the libra. The government now seems to be on a secure gold basis, and the director of the United States mint gives a par value to the sol (48.665 cents), which in 1899 he had quoted at 43.6 cents. Practically the adoption of the gold standard was realized in March, 1900, when gold and silver coins began to circulate at the present legal parity. The coinage ratio of gold and silver is 31 to 1, and the coinage of the libra is free.

Revenue is derived chiefly from customs; other sources of revenue are taxes on real estate, the salt monopoly, posts, and telegraphs. The largest expenditures are for the departments of finance, war, and marine, and the interior. Stamp revenues and taxes on opium, alcohol, and tobacco were farmed out in 1896 for two years, the conditions being that the government receive about 126,700 soles a month and one-half of the profits above that amount. On the expiration of the two years the contract was renewed for five years, during which time the government receives three-fourths instead of one-half of the profits over the stated amount. Since 1896 the salt industry has been a government monopoly, the proceeds being placed in fund for the redemption from Chile of the provinces of Tacna and Arica. The estimated revenue and expenditure have been as follows for fiscal years:

	1897. Soles.	1898. Soles.	1899. Soles.
Revenue.....	10,721,520	10,785,850	11,852,000
Expenditure.....	11,308,240	11,488,240	12,600,000

By an arrangement concluded in January, 1890, the Peruvian government was released from its foreign debt by a cession to the bondholders, who now constitute the Peruvian corporation, of all the federal railways, mines—including the large silver mines of Cerro de Pasco—lands, and guano deposits for a term of sixty-six years. According to the latest report available, the internal debt amounts to about 48,204,000 soles.

Industries.—Agriculture and mining are the principal industries; manufactures, though developing, have not yet become important. Though industrial conditions were fairly prosperous in 1900, the agricultural development of Peru has not hitherto been satisfactory, but it may be greatly augmented by irrigation, which has been proposed for the arid tracts between the Andes and the coast. The fact that large districts are held by a few proprietors unable to develop them properly also makes against agricultural prosperity. The leading products are cotton, coffee, and sugar, while others of importance are cacao, rubber, coca leaves, rice, and other cereals, potatoes, dyewoods, medicinal plants, wool (especially alpaca), and fruits. The districts of Chanchamayo, Pancatambo, and Perene, in central Peru, comprise the chief coffee region. Though coffee culture is increasing, satisfactory results will probably not be realized until steam communication is established between the valley of Chanchamayo and the Amazon port Iquitos. The number of recorded mining claims is about 3500, of which about 2500 are in course of development. About one-half of the mining companies are controlled by foreigners. Among the minerals now exploited are silver, gold, copper, mercury, zinc, lead, sulphur, salt, borate of lime, and petroleum, the production of the last two commodities being comparatively new industries. The production of petroleum is increasing, the output for 1898 (17,225,000 litres, or 4,075,284 gallons) being nearly six times that of 1891. The exploitation of borate of lime in the department of Arequipa has assumed considerable importance: the export of 11,850,000 kilogrammes in 1898, worth about \$249,000, was ten times the amount exported in 1896.

Commerce.—The leading exports include sugar, silver, copper, cotton, coffee, rubber, wool, cocaine, coca leaves, rice, hides, borate of lime, and guano. The principal imports are cotton and woollen textiles, iron and steel ware, and machinery, food-stuffs, and furniture. Foreign trade, which is carried on mainly through the ports of Callao, Mollendo, Salaverry, Chimbote, Paita, Eten, Trujillo, and Pisco, has been reported (in soles) as follows for fiscal years:

	1897.	1898.	1899.
Imports.....	16,128,640	19,297,272	18,734,949
Exports.....	28,168,448	30,274,776	30,725,911

Communications.—Industrial progress is retarded in Peru, as in other Latin-American countries, by the difficulties of transportation. Wagon roads are few in number and for the most part in wretched condition. In the May *Bulletin* of the Bureau of American Republics was reported the opening of the Central Railroad, connecting the coast with the navigable rivers on the east of the Andes. Other railway lines have been projected. In 1897 the railways open to traffic aggregated 911 miles in length, of which those belonging to the state (844 miles) were operated by

the Peruvian corporation. The cost of the railways, private and state, including those ceded to Chile, is about \$175,000,000. In 1897 the freight carried by the railroads amounted to about 540,000 tons, and in 1898 about 505,000 tons; the passengers carried in each of these years numbered about 3,150,000. The Galera tunnel on the Oroya road, with an elevation of 15,665 feet, is the highest point ever reached by a railway. In 1900 Peru had 3618 kilometres (2248 miles) of telegraph lines.

Religion and Education.—Political but not religious freedom is guaranteed by the constitution, which prohibits the public exercise of other faiths than Roman Catholicism, the state religion. The law, however, is not strictly enforced, as there are Anglican churches and schools in Lima and Callao, and in the spring of 1899 it was announced that the government would guarantee to foreigners complete liberty of conscience, "without any further obligation than that of respecting the state religion." Primary instruction is nominally compulsory, and in the municipal schools gratuitous. In 1900 the reported number of periodicals and newspapers published was 68, of which Lima had 33.

Political Troubles.—A cabinet that lasted only three days was formed on August 28 under Señor Ribeyro, and was succeeded on the 31st by one under Señor Zegarra, composed of men of affairs, whose interests, it was believed, were more in the good of the nation as a whole than in any political party. This cabinet, however, was decidedly disappointing. Upon a unanimous vote of censure, passed by the congress for alleged malfeasance on the part of the minister of finance, the cabinet resigned on October 2, and the following day a new cabinet was formed with Señor Almenara at its head. The financial scandals that brought about the ministerial crisis also provoked rioting in Lima. A mob of 5000 persons was reported to have stoned the presidential palace on September 30.

PETROLEUM. The production of petroleum in the United States in 1899 amounted to 57,070,850 barrels, valued at \$64,603,904, and the estimated production for 1900 is put at 63,100,596 barrels, valued at \$75,365,685. During the year 1900 the most important developments in the United States have been, perhaps, in California, where some great strikes were made, especially one of paraffine oil, reported from Marin County. If this discovery proves as important as accounts indicate, it is, indeed, of interest, for the reason that most of the California petroleum has an asphaltum base. The production from all the oil fields in California during 1900 was larger than that of the preceding year, and the wells of Kern County were especially prominent. Owing to the scarcity of coal in the Pacific coast States, petroleum is finding many applications which would be overlooked in the East. It is extensively used in the Southwest as fuel for locomotives, and it is stated that a contract has recently been made by the Santa Fé Railroad with an oil company, which calls for the annual delivery of 1,250,000 barrels of oil for the next five years.

The States of New York, Pennsylvania, West Virginia, and a part of Ohio, comprising the Appalachian district, produced during 1900, 36,486,222 barrels, the Lima oil fields of Ohio and Indiana 21,647,095 barrels, while the estimated production for other States is as follows: California, 3,500,000 barrels; Colorado, 500,000 barrels; Kansas, 125,279 barrels, and Wyoming, 7000 barrels. The *Chemiker Zeitung* (Vol. XXIV., p. 92) gives a review of the petroleum industry of the world.

PETROLEUM DRINKING. It is reported that the habit of petroleum drinking has been prevalent for a considerable period in Bastille, France, and is spreading through the country. The Medical Society of Paris considers it necessary to take measures to limit the evil. The habit is said to render the victim morose and sullen. The ultimate results of the indulgence are not yet studied by physicians.

PHELPS, EDWARD JOHN, M.A., LL.D., ex-minister of the United States to Great Britain, died in New Haven, Conn., March 9, 1900. He was born at Middlebury, Vt., July 11, 1822, and was educated at Middlebury College, graduating there in 1840. After studying law at Yale and with Horatio Seymour he was admitted to the Vermont bar in 1843. He practised in his native town and in Burlington, whither he went in 1845. Before the war, like his father, United States Senator Samuel S. Phelps, he was a pro-slavery Democrat. In 1851-53 he was second comptroller of the treasury under President Fillmore. In 1870 he was a delegate to the Vermont constitutional convention, in 1877 presided over the centennial ceremonies commemorating the battle of Bennington, and in 1880 lectured on medical jurisprudence at the University of Vermont, and was elected president of the American Bar Association. In the last-named year, as the Democratic candidate, he stood unsuccessfully for the governorship of the State, and ten years later, as a candidate for the United States Senate, was defeated by the late Justin Smith Morrill. In 1885 he was nominated by President Cleveland to succeed James Russell Lowell as minister at the Court of St. James. The ability of his eminent predecessor made his position a difficult one to fill, but he showed the tact of a true diplomatist, and while always firmly safeguarding American interests, succeeded both in gaining the esteem of the

English people and in strengthening the sympathy between them and his own countrymen. In 1881 Phelps was appointed Kent professor of law at Yale, and resumed his duties there after his return from London. He was an authority on constitutional and international law, and was highly regarded as a lecturer in the law school. In 1893 he served as one of the counsel of the United States government before the court of arbitration on the Bering Sea controversy. In the presidential campaign of 1896 Phelps could not bring himself to support the Democratic platform and candidate, and cast his ballot for Mr. McKinley. He disapproved of the latter's administration, however, touching Cuba and the Philippines, and became a decided anti-expansionist. He was a conservative and scholarly man, whose opinions on law and statecraft were usually sound and always honest. At the time of his death a prominent journal said that "first of all, he was an American, whose patriotism was never under suspicion and who honored his country not by declaiming, but by exemplifying its highest virtues."

PHI BETA KAPPA, an honorary Greek-letter society, chapters of which are found in 50 American colleges. It was organized in 1776, and has an active membership of over 12,000. The next triennial meeting is to be held in 1901. The government of the chapters is directed by the national council, consisting of 20 senators and delegates from the various chapters. Officers of the national council: President, Hon. J. A. De Remer, LL.D., Schenectady, N. Y.; secretary and treasurer, Rev. E. B. Parsons, D.D., Williamstown, Mass. The secretary has just issued a handbook and catalogue of the fifty chapters.

PHILHARMONIC SOCIETY, New York, founded 1842 and incorporated 1853, is the oldest and largest orchestral association in the United States. Eight concerts and eight public rehearsals were to be given in the season 1900-01 at Carnegie Hall. President, E. Francis Hyde; conductor, Emil Paur; secretary, August Roebbelen.

PHILIP, JOHN WOODWARD, rear-admiral in the United States Navy, died at the Brooklyn Navy Yard, June 30, 1900. Born in New York City, August 26, 1840, he was appointed to the Naval Academy 1856, and was engaged in the blockading service against the Confederacy during the entire Civil War. He was severely wounded in the Stone River fight while executive officer of the *Paunee*, and became a lieutenant-commander shortly after the close of the war. In 1877 he was detached from the regular service to command the Woodruff scientific expedition around the world. He became a captain in 1889, and took command of the *Texas* on October 18, 1897. With that battle-ship he took a conspicuous part in the naval battle of Santiago, July 3, 1898, being in the thick of the firing and the pursuit of the Spanish boats from start to finish. Captain Philip's gentleness and deep religious devotion were attested by the following incident of that engagement. When the battle was practically won, an explosion took place on the *Oquendo*, and the dismembered legs, arms, and bodies of Spanish sailors flying through the air could be plainly seen from the *Texas*. The American sailors began cheering, but were quickly stopped by Captain Philip, who compelled silence with the command, "Don't cheer, boys, the poor devils are dying." In January, 1899, he was placed in command of the Brooklyn Navy Yard, and in March was promoted rear-admiral. He was one of the most popular and conspicuous figures at the celebration in honor of Admiral Dewey in September, 1899.

PHILIPPINES, a group of islands acquired by the United States from Spain in 1898, lie in the Pacific Ocean between 4° 45' and 21° north latitude, and in longitude between 118° and 127° east from Greenwich. The number of islands has been estimated at from 1200 to 1800, most of which are small. The actual land area is about 140,000 square miles. The island of Luzon, where the capital city (Manila) is located, is the largest member of the group, being about the size of the State of New York. Mindanao is nearly as large, but its population is much smaller. The estimates of population of the islands vary from 7,500,000 to 10,000,000. Since parts of the islands are as yet unexplored, and inhabited by tribes almost savage, no census has ever been taken. Racially the inhabitants are principally Malays, but there are thirty or more different races, all speaking different dialects.

Climate.—The thermometer during July and August rarely goes below 79° or above 85°. The extreme ranges in a year are said to be 61° and 97°, and the annual mean 81°. There are three well-marked seasons: temperate and dry from November to February; hot and dry from March to May; and temperate and wet from June to October. The rainy season reaches its maximum in July and August, when the rains are constant and very heavy. The total rainfall has been as high as 114 inches in one year. Yellow fever appears to be unknown in the islands. The diseases most fatal among the natives are cholera and small-pox, both of which are brought from China. Of the milder diseases, the most prevalent are malarial fever and diarrhoea.

Commerce.—During the fiscal year ending June 30, 1900, the imports into the



PHILIPPINE ISLANDS.

SCALE, 317 MILES TO ONE INCH.
0 50 100 150 200 250 300
KILOMETERS.

THE MATTHEW MONTGOMERY CO.
BALTIMORE, Md., U.S.A.

War territory shown on larger scale map is here related Orange.



SEAT OF WAR IN THE ISLAND OF LUZON.

COMPILED, DRAWN AND ENGRAVED
BY THE MATTHEWS-NORTHROP CO., IN BUFFALO.

15 MILES TO THE INCH.
SCALE OF STATUTE MILES

Railroads: ——— Highways: ———
Steamship Lines: - - - - - Telegraph Lines: ———

United States from the Philippine Islands aggregated in value \$5,971,208; exports from the United States to the Philippines, \$2,640,449; total, \$8,611,657, an increase of \$3,801,600 in a year. The principal imports into the United States from the Philippines in 1899-1900 were sugar, \$925,335, and vegetable fibres, \$5,014,770.

Banks and Currency.—In 1900 the Banco Español Filipino reported: Capital stock, \$1,500,000; reserve fund, \$750,000; safety deposits, \$488,390; time deposits, \$857,372; and total resources, \$8,580,834. The Monte de Piedad y Caja de Ahorros (savings bank) reported, on August 31, 1900: Capital, \$231,361; savings deposits, \$740,314; and total resources, \$1,176,160. The established currency in the Philippine Islands when the United States took possession was the Mexican silver dollar. Since the American occupation a large amount of American gold pieces has been introduced, chiefly for army purposes, and the adoption of this dollar as the regular currency of the islands has been suggested. It is generally conceded that such a change would have a very disturbing effect on trade conditions throughout the islands, and would be considered a hardship by the provincial and wage-earning classes. The chief causes for complaint at present are the fluctuating value of the Mexican silver dollar, and the great scarcity of all kinds of money, but especially of fractional currency. As a corrective for this unsatisfactory state of the currency, several plans were advanced. One plan was to place the currency upon a gold basis, United States money. But the paymaster-general and others pointed out that by changing to a gold basis, without time for preparation, the business of the islands would be thrown into a state of greatest confusion, thus creating a corresponding antagonism to the United States. Two other plans were suggested. One was, that the United States should coin a silver dollar for use in the islands, which, although sharing in the fluctuations of the market, would prevent the limited supply of Mexican dollars from being uniformly valued 2 or 3 per cent. higher than elsewhere in the world, and could not be forced into circulation in the East. For this reason it was recommended that the Manila mints be opened for the free coinage of dollars of the weight and fineness of Mexican dollars, and that there be also a subsidiary coinage of smaller pieces, debased enough to prevent melting or export. "This Philippine currency should not be given a legal-tender value, but be allowed to circulate on its intrinsic value, and as such be receivable for customs, taxes, etc., as Mexicans are at present." It was pointed out that a serious objection to this plan lay in the fact that the industries and business of the islands would still be left to "the evil effects of a money unrelated in any fixed way to the settling house standard" of the great commercial centres. To remedy this defect, the secretary of the treasury (U. S.) proposed that either the United States or the insular government coin pesos or Filipino dollars, weighing $41\frac{1}{2}$ grains each 900 fine, and redeem them on demand, at the rate of two Filipino dollars for one of gold. At the prevailing price of silver bullion this would net the government about 5 per cent. profit, and the profit so acquired might be placed in a trust fund to meet shrinkage in possible redemptions. By this means comparative stability would be given to the exchanges of the island. For since in the islands gold and silver would be always interchangeable at the rate of one to two, "neither London nor New York exchange could reach a point higher than the cost of shipping gold, nor could the rate of exchange fall below the cost of bringing gold into the islands." This plan then appeared to offer the best means of establishing a domestic Filipino money, consonant with the habits and prejudices of the natives, in sufficient supply, stable, and in "a fixed relation to the world's money."

Education.—After the Americans had taken Manila, the schools of that city were reopened by the military authorities through an order which made attendance compulsory. The first American superintendent was Father McKinnon. By September 30, 1899, the total attendance in the Manila schools, including the high school, called the Ateneo, the girls' municipal schools, and the normal school, was 5706, the school population being about 25,000. Secondary education has been provided for by the college of San Juan de Letran, the municipal athenæum in Manila, and colleges and academies in the provincial capitals, which professed to fit their scholars for the University of St. Thomas, in Manila. There were 69 of these institutions in all. There were also a normal school, a nautical school, business colleges, a manual training school, a school of painting, sculpture and engraving, agricultural experiment schools, a school of telegraphy, and advanced schools for girls. The appointment of F. W. Atkinson as superintendent of public instruction on May 6, 1900, marks the change from the military to the civil control of the schools. The school year is from June to March. In 1899 there were in Manila 41 schools, maintained at a cost of about \$5000 per month. Two of the schools for boys are conducted by 28 Jesuit fathers, and one, for girls, by a Spanish sisterhood, of whom 12 act as teachers. The remaining 38 schools—19 for each sex—are conducted under the auspices of the American authorities.

Military Government.—The military division of the Philippines is composed of

four departments, as follows: Department of Northern Luzon, headquarters, Manila, commander, Major-General Loyd Wheaton; Department of Southern Luzon, headquarters, Manila, commander, Major-General John C. Bates; Department of the Visayas, headquarters, Iloilo, commander, Brigadier-General Robert P. Hughes; and Department of Mindanao and Jolo, headquarters, Zamboanga, commander, Brigadier-General Wm. A. Kobbé. The headquarters of the entire division of the Philippines is at Manila, and the commander is Major-General Arthur MacArthur. For an account of the military movements, see paragraph on The Philippine Insurrection in the article UNITED STATES.

The Commission of 1899.—On February 1 the Philippine investigation committee, appointed by the President in 1899, and consisting of Jacob Gould Sherman, president of Cornell University, chairman; Admiral George Dewey, Professor Dean C. Worcester, University of Michigan; Mr. Charles Denby, ex-minister to China, and General E. S. Otis, presented the most important part of their final report. The commission recommended that so soon as military conditions permitted, a territorial government should be established with a governor-general and cabinet, a senate and a chamber of deputies; the senate to be half appointive and half elective, and the chamber to be wholly elective on an educational and property suffrage basis. The Filipinos ought to be represented by a delegate in Congress, and all municipal and administrative officers should, so far as possible, be chosen from the Filipinos. The different tribes in the Archipelago—Visayans, Tagalogs, Vicolos, Ilocanos, etc.—ought to be allowed to a large extent to manage their own affairs in accordance with their customs and ideas, in somewhat the same way that counties in American States have separate jurisdiction; this would in no way interfere with a central unified government, which the commission considered absolutely necessary.

The Philippine Commission.—In March, 1900, the President appointed a civil commission composed of Wm. H. Taft, of Ohio, president; Professor Dean C. Worcester, of Michigan; Luke E. Wright, of Tennessee; Henry C. Ide, of Vermont; and Professor Bernard Moses, of California, to "continue and perfect the work of organizing and establishing civil government already commenced by the military authorities, subject in all respects to any laws which Congress may hereafter enact." More particularly, the duties of this commission were, first, to establish municipal governments, in which the natives of the islands, both in the cities and in the rural districts, should be afforded the opportunity to manage their own affairs to the fullest extent of which, after careful study of their capacities, they might be found to be capable; second, to organize government in the larger administrative divisions corresponding to counties, departments, or provinces; and third, whenever, in the opinion of the commission, the condition of affairs in the islands should be such that the central administration might safely be transferred from military to civil control, to report that conclusion to the secretary of war of the United States, together with recommendations as to the form of civil government to be established. The commissioners proceeded to the Philippines, and arrived at Manila in April.

On September 20, the preliminary report of the commission, dated August 21, was made public.

The report was in part as follows: "Hostility against Americans was originally aroused by absurd falsehoods of unscrupulous leaders. Distribution of troops in 300 posts has by contact largely dispelled hostility, and steadily improved temper of people. Policy of leniency, culminating in amnesty, had marked effect to induce surrenders, until defining of political issues in United States, reported here in full, gave hope to insurgent officers still in arms of changed policy and stayed surrenders to await result of elections. Existing insurrection organization now maintained with greatest difficulty. Change of policy, by turning islands over to a coterie of Tagalog politicians, will blight their fair prospects of enormous improvement, drive out capital, make life and property—secular and religious—most insecure, banish by fear of cruel proscription considerable body of conservative Filipinos, who have aided Americans in well-founded belief that their people are not now fit for self-government, and reintroduce the same oppression and corruption which existed in all provinces under Malolo's insurgent government during the eight months of its control. The result will be factional strife between jealous leaders, chaos and anarchy, and will require and justify active intervention of our government or some other." The commission reported further that business had been of late much improved, and that the customs collections were larger than they had ever been under Spanish rule. Extensive improvements were recommended for the harbor of Manila, which would, the commission believed, with proper tariff and facilities, become the great port of the Orient. The commission recommended that railroad franchises should be at once granted. "Railroads," the commission said, "will revolutionize life and business in these wonderfully rich, beautiful and healthful tropical islands." The report concluded as follows: "Calls from all parts of the islands for public schools, school supplies, and English teachers are greater than the commission

can provide until comprehensive school system is organized. Night schools for teaching English to adults are being established in response to popular demand. Creation of central government within eighteen months, like that of Porto Rico, under which substantially all rights subscribed in bill of rights in federal constitution, are to be secured to the people of the Philippines, will bring to them contentment, prosperity, education, and political enlightenment."

Civil Service.—On September 19, the Philippine commission, in whom was vested the civil authority of the islands, inaugurated a system of civil service for the Philippines. This system provided for the appointment, by examination, of civilian employees in the executive branches of the insular government, central, departmental, and provincial, and in the city of Manila, and provided further for the promotion of employees after satisfactory service and further examination. To carry out this purpose a civil service board of three members was established, with powers similar to those exercised by the United States Civil Service Commission; and this latter commission was directed by the President to arrange for, and conduct such examinations for Philippine appointments as were held in the United States. The Philippine commission provided that all applicants for positions should be either natives of the Philippines or citizens of the United States, and that, as regards applicants, no inquiry should be made and no consideration given "to any information relative to the political or religious opinions or affiliations of persons examined" for entrance or promotion in the service, provided, however, that disloyalty to the authority of the United States should be considered as a complete disqualification for holding office. Other things being equal, natives of the Philippines were to be preferred for service, and after them "all honorably discharged soldiers, sailors, and marines of the United States." In their discretion, the civil service board was authorized to require applicants from the United States to be examined in Spanish, and applicants from the Philippines to be examined in English. In examinations for promotion, credit was to be given to the length of time the applicant had held office, and to the efficiency and faithfulness of his work. The board was directed to conduct examinations not only for the more important executive technical positions, but also for members of the police, fire departments, and prison departments in Manila; in these latter cases examinations were not to be competitive, and the determination of the applicant's industry, sobriety, and capacity were to be considered sufficient.

Civil Government.—In his annual report for 1900, the secretary of war reported that a system of civil government for the Philippines had been put into partial operation. This was also witnessed by the report of the Philippine commission, the Amnesty proclamation of the military governor, and the establishment of civil service in the islands. The secretary further reported the organization of a supreme court, composed of six Filipino lawyers of Luzon, Panay, and Cebu, and of three officers of the United States army, who were also members of the bar. Of this court Don Cayetano Arellano, an able lawyer of the islands, was made chief-justice. Subordinate courts were also created, first for the city of Manila, and later for other regions, as the American occupation extended. The substantive body of Spanish law, which had previously prevailed in the Archipelago, was held to by the courts, but the Spanish code of criminal procedure was changed. This "had been exceedingly oppressive and regardless of personal rights," and it was, therefore, desired to introduce, as speedily as possible, the rights and privileges accorded by United States laws to citizens accused of crime. Accordingly, the supreme court, assisted by the native attorney-general, Don Florentino Torres, drew up a new code of criminal procedure, which was promulgated by an order of April 23, 1900. On January 29, 1900, a board, consisting of the chief-justice, the attorney-general, and three American judicial officers, was appointed to draw up a general statute for "the establishment of municipal governments, through which the people of the islands might control their own local affairs by officers of their own selection." On March 29, this statute, which gave to new municipalities "a really autonomous and decentralized" government, went into effect. To the central authority was reserved only such supervisory power as might be necessary to require the authority vested in the municipal officers to be exercised with loyalty and good faith. Among laws and regulations adopted in the early part of the year were the following: Civil marriages were accorded the same legal status as religious marriages; a quarantine act was put in force; the coasting trade was regulated, and "a rigid high license and early closing law was enforced upon the saloons in the city of Manila." On September 1, 1900, the Philippine commission took over the central civil authority of the Archipelago. On September 12 this commission appropriated \$2,000,000 (Mexican) for the construction and repair of highways and bridges, and \$5000 (Mexican) for the survey of a railroad to the mountains of Benguet, in the central portion of the Isle of Luzon. The railroad proposed was to be about 45 miles in length and was to extend from the railroad connecting Manila in the south and

Dagupan by the Gulf of Lingayen on the central west of the island, to the high interior portion of the island, about 170 miles from Manila. It was believed that the dry and cool climate in this section would be of great value for the recuperation of troops and foreign residents. Moreover, the railroad would furnish communication with large stretches of rich agricultural land. Among other acts of the commission was the adoption of a measure for the improvement of the harbor of Manila, where, under existing conditions, cargoes of large vessels had to be lightered for several miles; the appointment of a superintendent of public instruction; and the consideration of a revised tariff schedule. The secretary of war stated that the revenues of the island were increasing, although derived mainly from customs. The customs receipts for the year ending June 30, 1900, were \$5,482,448.45. The receipts for the six months ending June 30, 1900, showed, as compared with the six months of the preceding year, an increase of \$1,785,496.25. As, however, the revenues would not suffice for the immediate needed improvements of roads and harbors, and for the construction of schools and railroads, the secretary recommended that Congress either make a loan to the insular treasury, to be repaid from the revenues of the island, for purposes of railroad construction, or that authority be granted the island to issue bonds which should be secured by a lien upon the road.

Amnesty Proclamation.—On June 21, 1900, upon the approval of the President and the Philippine commission, a proclamation was issued by the military governor, offering "complete immunity to all Philippine natives in insurrection against the United States who should within ninety days subscribe to the authority of the United States in the Philippines." The proclamation set forth that natives presenting themselves for this purpose would be "received with due consideration, according to rank," that provision would be made for their immediate necessities, and that the United States would furnish them with transportation to any part of the archipelago. The proclamation concluded by stating that "in order to provide in some measure for destitute Filipino soldiers," the United States would pay 30 pesos (\$15) for every rifle in good condition given over to the military authorities. As supplemental to this proclamation and in explanation of the intentions of the government to which the Filipinos were asked to give allegiance, the military governor on July 2 issued another public statement, based largely upon the President's instructions to the Philippine commission. In this statement the governor gave assurance that whatever form of civil government was established in the Philippines the fundamental governmental principles common to English-speaking countries would be observed; that private property would not be taken for public use without just compensation; that neither slavery nor involuntary servitude should exist, except as a punishment for crime; that no law should be passed abridging the freedom of the press or of the rights of the people peacefully to assemble and petition the government for a redress of grievances; that no disqualification for holding civil or military office should arise from service in the insurgent army; that there should be complete religious freedom, and that no minister should be molested in his calling, neither should he in any way receive aid from the government, but that the separation of church and state should be absolute and entire. In his individual capacity the governor also guaranteed the following: First, that upon the complete cessation of hostilities the United States would return or make adequate payment for all private Filipino property in its possession, provided that the owners thereof took the oath of allegiance; and, second, that all money held by the Filipinos for the use of the insurgent army should upon being deposited with the United States government at Manila, be used as a trust fund for the benefit of disabled insurgent soldiers and their dependents. This fund should be distributed, under the advice of the military governor, by a committee recommended by General Aguinaldo or "such other high authority as was satisfactory to all concerned;" and in consideration of this money deposited for relief purposes the United States agreed to place in the same fund money to an equal amount captured by the United States from the insurgent forces. The secretary of war stated that after the issuing of this proclamation more than five thousand persons of all grades of the military and civil service of the insurrection, and including many of the most prominent officials of the former Tagalog government, took the oath of allegiance to the United States.

New Purchases.—By an oversight the islands of Cibitu and Cagayan were not named in the treaty of peace between the United States and Spain in 1898. They are situated at the southern end of the Philippine archipelago, and have a population of about 7000. The omission was discovered in 1900, and to avoid the embarrassment of having the islands fall into the possession of some other Power than Spain, to be used as a naval station, the United States agreed by treaty to pay Spain \$100,000 for them.

The Political Outlook in the Islands.—That conditions in the Philippines, as reported by the Philippine commission, promised in the near future peace and contentment under federal authority was denied during the year by several competent



HON. WILLIAM H. TAFT, PRESIDENT OF THE CIVIL COMMISSION.



MAJOR-GENERAL ARTHUR MACARTHUR, MILITARY GOVERNOR.

observers. These writers contended that the Americans had unnecessarily aroused the antagonism of the Filipinos by treating them all alike as savages ignorant of Western civilization, when, in fact, there were thousands of Filipinos who were intellectually equal to average middle-class Europeans. Mr. John Foreman, a recognized authority upon Philippine matters, also thought that the American treatment of the ecclesiastical question had further aggravated the situation. "The fundamental cause of the rebellion against Spain," said Mr. Foreman, "was monastic interference in the civil government," and "the chief reform for which the natives shed their blood was the expulsion of the friars." At the brief session of the Philippine Congress a bill was enacted providing for church disestablishment, "because the whole community recognized that their tardy development in the past was due to retrogressive ecclesiastical tutelage—yet, strange to say, one of the first important acts of the American authorities in Manila was to favor the return of the monks to the islands, and there is still a movement on foot to restore to them their former status and the possession of lands to which they cannot show a good title."

Outside of these two special causes for complaint by the Filipinos was the more general fact that American institutions are at variance with the ideas, traditions, and customs of the Filipinos. On account of this, it is stated, that the Americans can hold without disturbance only such parts of the archipelago as are actually garrisoned, and that so soon as the garrisons are withdrawn from any place trouble will be likely to ensue. It may be expected that the Filipinos when conquered in any section will in general appear to be acquiescent to American rule. But this should not be taken too seriously, because such acquiescence may be dictated by self-interest or necessity, and does not necessarily indicate a permanent state of pacification. As indicating the extent to which lawlessness prevails in places not actually held by the Americans, and as showing, further, the extensive ill-will of the Filipinos toward the Americans—reflected in the commerce that the latter are able to carry on in the archipelago—may be cited the statement of M. Berard, the French consul at Manila, in an official report to his government. "With the insurrection vanquished," said M. Berard, "will it not be succeeded by bands of guerillas, who will spread terror in the provinces and destroy all security for the peaceable and law-abiding inhabitants? The reply is easy. It is useless for Europeans to think of establishing themselves in any other points than Manila and the ports Iloilo and Cebu. Merchants and traders may hope without danger to do some business in these towns, and little by little they may extend their operations into the interior, if the promised pacification becomes a reality. The struggle between the products of the United States and those of the nations which have hitherto controlled the trade of the Philippines has now lasted eighteen months, and the Americans have not yet succeeded in conquering the ground which they expected to capture almost entirely without difficulty. Their failure should inspire confidence among foreign manufacturers, and the efforts of the latter to introduce their products in the Manila markets should be continued with cleverness and prudence."

As bearing upon the feeling of the Filipinos may be mentioned also the statement made by General MacArthur toward the end of the year. General MacArthur reported that the islands were honeycombed with secret organizations opposed to the Americans, and that while organized warfare was lessening, the guerilla opposition showed little signs of subsidence. It was comparatively easy to overcome the small Filipino armies, but the raiding bands which formed or disappeared in a night were very difficult to overtake.

For further discussion of the Philippine question, especially those phases of it referring to the justice and expediency of the retention of the islands by the United States, see article **PRESIDENTIAL CAMPAIGN** (paragraph Imperialism). See **FILARIA**; **INSANITY**; **LEPROSY**; **PLAGUE**; **SMALLPOX**; **TYPHOID FEVER**; **VITAL STATISTICS**; **YELLOW FEVER**.

PHILLIPS, STEPHEN, produced in 1900 a new dramatic poem, *Herod*, which was presented at Her Majesty's Theatre, London, by Beerbohm Tree. He was born at Somertown, near Oxford, July 28, 1868, the son of Rev. Stephen Phillips, now canon of Peterborough Cathedral. In 1886 he entered Queen's College, Cambridge, but left at the end of the first term to go on the stage. In 1888 Mr. Phillips contributed a number of poems to *Primavera*, a pamphlet published at Oxford. *Ercmus*, a poem in blank verse, appearing in 1894, was his first independent publication. *Christ in Hades* was well received in 1897, the same year that his volume of *Poems* was crowned by the *Academy* as the best poetic production of the year. Stephen Phillips's non-dramatic poetry here represented follows two distinct and opposing lines. *Christ in Hades*, *Marpessa*, *Lazarus*, and *The Lily* are poems of vision and exaltation; *The Wife*, *Faces at a Fire*, and *The Woman with the Dead Soul* are poems dealing with the commonplace in life. In the winter of 1899 Mr. Phillips produced his beautiful blank-verse tragedy, *Paolo and Francesca*. See **LITERATURE, AMERICAN AND ENGLISH**.

PHILLPOTTS, EDEN, an English novelist, published in 1900 *Sons of the Morning*. Since the appearance of *Lying Prophets* in 1897 he has been the recognized novelist of Dartmoor and Dartmoor folk. Mr. Phillipotts was born at Mount Abou, India, in 1862, and lived for many years in Devonshire. On first coming to London he studied for the stage, but after a short time abandoned this profession to devote himself to writing. His earlier stories, which are somewhat brutally realistic and crudely written, include: *The End of a Life* (1890); *Folly and Fresh Air* (1892); *A Tiger's Cub* (1892); *In Sugar-cane Land* (1893); *Some Every-day Folks* (1894); *Down Dartmoor Way* (1895); *A Deal with the Devil* (1895); and *My Laughing Philosopher* (1896). Mr. Phillipotts has also written occasional plays and some poems for children. *Lying Prophets* (1897); *Children of the Mist*, and *Sons of the Morning* are his representative novels. His work has been compared with that of Thomas Hardy in its feeling for nature. The late R. D. Blackmore regarded Mr. Phillipotts as his legitimate successor in the depiction of Cornish life.

PHILOLOGICAL ASSOCIATION, AMERICAN, organized in 1869, had in 1900 a membership of 525. General meeting for 1901 at Cambridge, Mass., July 9-11. Publishes *Transactions and Proceedings*. President, Professor Samuel Ball Platner; secretary, Professor Herbert Weir Smyth, Bryn Mawr, Penn.

PHOSPHATE. The production of phosphate rock in the United States in 1899 amounted to 1,515,702 long tons, valued at \$5,084,076, which was an increase of 206,817 long tons over 1898, and represented a value greater by over \$1,000,000. The largest part of this production came from Florida, South Carolina being second on the list, and Tennessee third. Pennsylvania became a producer for the first time in 1899, 2000 long tons being mined in Juniata County. The exports during 1899 were 689,964 long tons.

During the past year extensive deposits of phosphate have been opened up in Algeria, and it is stated that the material will be treated at factories to be erected near the mines, from which the product will be shipped to Europe. In view of the fact that the United States is such a heavy exporter of this material the development of such a foreign source of supply cannot fail to have some effect upon the American shipments.

These Algerian deposits are divided into two large fields. One deposit is found in the province of Souk Arrhas, while the other is to the south, and includes the phosphate beds of Tebessa and borders on the Saharan Desert. Both of the areas represent great guano accumulations of the Eocene age.

The world's production of phosphate for 1898 was as follows:

	Tons.		Tons.
Algiers	300,000	Tennessee	350,950
Tunis	120,000	North Carolina.....	4,000
Belgium	100,000	Pennsylvania	4,000
Somme District.....	350,000	Miscellaneous	92,000
South Carolina.....	500,000		
Florida	580,000	Total.....	2,400,000

PHOTOGRAPHY WITH VISUAL TELESCOPES. See ASTRONOMICAL PROGRESS.

PHOTOTHERAPY. For some years, treatment of lupus, cancer, and certain forms of skin diseases have been treated by Finsen, of Copenhagen, with sunlight and electric light. The patients lie on tables, exposed to sun or arc light. As directed by the medical assistants, nurses press over indicated spots discs of glass, hollow, through which cool water circulates constantly. The light is directed upon the spot, and shines so brilliantly that the nurses are obliged to wear dark glasses to protect their eyes. Each exposure lasts an hour. The number of patients at Finsen's Institute has increased from 7 in 1897 to an unnumbered clientèle. Over 100 are on a waiting list. The treatment seems to be successful. In June, 1900, Malcolm Morris, of St. Mary's Hospital, London, demonstrated a combined treatment of lupus and other superficial skin diseases by sunlight and Röntgen rays. The latter rays penetrate to deep layers not reached by sunlight or electric light. He reports success. An institute for Finsen's treatment was opened by a Brooklyn physician in December.

PHYSICAL CHEMISTRY. See CHEMISTRY.

PHYSICAL SOCIETY, AMERICAN, organized May 20, 1899, for the advancement and diffusion of physical knowledge, held its first regular meeting October 28, 1899. Four regular meetings are held each year, ordinarily in New York. Annual dues, \$5; membership, 90. President, Professor Henry A. Rowland; secretary, Professor Ernest Merritt, Ithaca, N. Y.

PHYSICIANS, ASSOCIATION OF, AMERICAN. This association is composed of clinicians, pathologists, bacteriologists, pharmacologists and physiological chemists. Its membership is limited to 125 and has never been completely filled. It has for its object the advancement of scientific and practical medicine. It held its fifteenth annual meeting at Washington, D. C., May 1-3, 1900. Officers elected: President, Wm. H. Welsh, M.D., Baltimore, Md.; secretary, Henry Hun, M.D., Albany, N. Y.

PHYSICS. While there has been a large amount of investigation and research during the year 1900, which has materially increased our knowledge of physical phenomena and theory, yet few discoveries of prime importance, such as have been made in other years, are to be recorded.

International Congress of Physicists.—During the month of August, in connection with the Paris Exposition, an International Congress of Physicists was held, at which the condition of this branch of science was thoroughly discussed. The congress was under the direction of M. Cornu as president, with Lord Kelvin as honorary president, and was divided into seven sections. In each section a certain number of the members had previously been appointed to prepare reports dealing with some branch or department in which they were especially interested. These reports, which were carefully prepared, formed the basis of the discussions at the meetings. The congress decided to recommend the adoption of the mechanical centimetre-gramme-second units (erg and joule) for the expression of calorimetric quantities, comprising naturally the solar constant, which the meteorologists will reduce to the calorie per minute per square centimetre. To express elastic constants the C. G. S. unit of pressure the *barie* was recommended, which, multiplied by 10^9 , gives the *megabarie*, a practical unit represented by the pressure exercised by a column of mercury 75 centimetres in height at 0° Centigrade and under normal gravity. The congress also recommended that national laboratories be established in those countries which did not as yet possess them.

The first section of the congress was concerned with questions of measurements. The use of the interference of waves of light for exact measurements was discussed, and also the exact measurement of temperature, a branch of physics in which substantial gains are being recorded annually. It was shown that the divergences of the various gas thermometers are now known over a long interval, and corrections have been obtained which can be applied to determinations. Substantial progress has been made in pyrometry, and the mechanical equivalent of heat is known with considerable exactness. Recent investigations in gravitation have been made with improved apparatus, and it was realized by the members of the section that the gravitation acceleration all over the world should be found in order to explain the various anomalies in this field, to which attention was called a few years ago by Bourgeois and Eötvös. This problem is of unusual interest, inasmuch as its solution will throw light on the constitution of the earth. A report was received which dealt with the electro-chemical equivalent of silver and the standard of electromotive force, it being the consensus of opinion that the cadmium cell was to be preferred for this purpose. A section devoted to mechanical and molecular physics was under the presidency of M. Violle, where such subjects as the statics of fluids, the permanent or temporary deformation of solids, the elasticity of crystals, the formation of crystals in a mother liquor containing a mixture of salts, capillarity, and other problems of liquids and gases were discussed, such physicists as MM. Amagat, Van der Waals, Mathias, Battelli, Weinberg, Mesnayer, Voigt, Van't Hoff, Gillaume, Mensbrugghe, and Prince Galitzine participating. A section devoted to optics was under the presidency of M. Lippmann, and features brought out in the various reports submitted were the practical realization of the black body, the verification of Stefan's law for a considerable range of temperature, and certain relations between the temperature and the positions of maximum in the spectrum. The validity of Kirchhoff's law for gases, it was announced, was called into question by certain recent experiments, but M. Pringsheim stated that he believed that it would stand if only the purely thermal radiation was considered. M. Rubens discussed the great progress in the study of the infra-red spectrum, and showed how closely the dispersion formulæ agreed with actual experiments, and demonstrated the connection between long light waves and electrical waves. The kinematics of the spectrum were discussed at length by the section, and M. Cornu described from an historical point of view the determination of the velocity of light, and exhibited the original apparatus of Fizeau and Foucault. The discussion of experiments demonstrating the identity of luminous and electrical oscillations was entered into with much interest, and it was evident that with better instruments and the elimination of errors this identity would become more marked. The electrical section was under the presidency of M. Potier, and M. Righi discussed the Hertz waves, and M. Branly described his researches in coherers, which form one of the essential parts of the wireless telegraphy apparatus. Other reports dealt with the study of the propagation of electrical energy, dielectrics,

and electrolysis and ionisation. M. Poincaré discussed the theory of the electric cell, M. Christiansen, contact electricity, M. Warburg, hysteresis, and M. du Bois the magnetic properties of bodies.

A fifth section dealt with the subjects of ionisation and magneto optics, being presided over by M. Becquerel. M. Lorentz made a report on magneto-optics, and then M. Becquerel and M. Curie described their discoveries and experiments with radio-active substances, showing specimens of the new materials to the congress in such a manner that their properties were visible to the entire audience. The section of cosmical physics was organized under the presidency of M. Mascart, and busied itself with the discussion of atmospheric electricity, glaciers, and the oscillations of lakes, it having been decided to leave questions of terrestrial magnetism to the Meteorological Congress which met later in the summer. Among the recent work described were the studies of the aurora made by the Danish expedition to Iceland, the evaluation of the solar constant by M. Crova, and a new theory of sun spots by M. Birkeland. The seventh section had as its president M. Charpentier, who acted in the absence of M. d'Arsonval, and was engaged in the discussion of physical phenomena connected with biology. The congress was most carefully arranged, and the various reports and papers submitted, together with a record of the proceedings, have been published, and furnish a complete and accurate summary of the condition of physical investigation and theory at the end of the nineteenth century.

National Physical Laboratories.—At the Paris Exposition there was an exhibition of scientific instruments of precision and apparatus generally, in which that furnished by German makers was universally commended. The great improvements made by these manufacturers has largely been due to the activity of the Imperial Physico-Technical Institute at Charlottenburg, near Berlin, where the standardizing of instruments and scientific tests of the greatest value are carried on under government control. In addition to the purely scientific results the value of such tests to commercial and manufacturing interests has been most marked, and laboratories of a similar description have been established in other countries. During the year the National Physical Laboratory of Great Britain, which was founded a few years ago, and has carried on its work in the buildings of Kew Observatory, has received a grant of money and land, and its control has passed into the hands of the Royal Society. It was intended to erect physical and engineering laboratories in the Old Deer Park at Richmond, but this was found impossible, and a royal grant was made of Bushey House, with about 30 acres of the park. The government has increased its grant for the building fund, and already a number of gifts of apparatus and money have been received. In the United States the question of establishing a testing and standardizing bureau of somewhat similar character to the *Reichsanstalt* and the National Physical Laboratory of Great Britain has been under discussion during the year. A bill was introduced in Congress in the spring of 1900 providing for the establishment of a National Standardizing Bureau which carried with it the endorsement of various scientific and engineering societies. The function of this bureau would be to care for the standards of the nation and to compare with them the secondary standards used in scientific and manufacturing operations. New instruments and standards are also to be constructed, and physical investigations dealing with standards and constants undertaken.

Becquerel Rays.—The Rumford medal of the Royal Society was awarded in 1900 to M. Becquerel for the discovery of the radiation from uranium now known as Becquerel rays. Further work in this field has been done by M. Becquerel, M. and Mme. Curie, M. Debiere, and M. Demarcey in France, while Sir William Crookes in England has carried on some interesting and important investigations.

Electricity.—The American Institute of Electrical Engineers at their annual session, held in Philadelphia on May 17 and the following days, decided that there was need of names for the electromagnetic units and of suitable prefixes to denote multiples and submultiples of these units in addition to those now in use. This action was taken in accordance with a report of the committee on units and standards, and it was voted to bring this subject, together with the rationalization of the electric and magnetic units, to the attention of the International Electrical Congress, which met in Paris in connection with the Exposition. The object of this movement was to attempt to bring together the centimetre-gramme-second units and the practical units employed in engineering work. When the International Congress of Electricians met at Paris this recommendation was brought forward by the delegates of the United States, and was referred to a commission for consideration. There was considerable discussion of the proposition, and the commission decided that it was not necessary to give names to all the electromagnetic units. Acting on the report of the commission, the congress decided to adopt the name of Gauss for the C. G. S. unit of magnetic field and that of Maxwell for the C. G. S. unit of magnetic flux.

This congress was organized under the presidency of M. Mascart and was divided into the following sections:

- I. Scientific Methods and Measurements. M. Violle, president.
- Ia. Generation and Mechanical Utilization of Electricity. M. H. Hillairet, president.
- Iib. Electric Lighting. M. Hippolyte Fontaine, president.
- III. Electro Chemistry. M. Moissan.
- IV. Telegraphy. M. Wunschendorff.
- V. Electro Physiology. M. Moissan.

A number of reports and papers were presented to the congress, which, for the most part, dealt with present types of machines and apparatus, though a number of new methods were described. The congress passed a resolution to the effect that electrical energy was to be considered legal property.

Telegraphy and Telephony.—There have been an unusual number of improved or new methods devised to extend the range of telephony and to increase the speed of the telegraph on both land and submarine lines. These systems are now undergoing practical tests, and several seem destined to be adopted in general use. As might be expected, a number of these inventions were shown at the Paris Exposition, but at the general meeting of the American Institute of Electrical Engineers, which was held in May at Philadelphia, two new and important methods were described. The first of these was the employment of an alternating current dynamo in connection with a submarine cable, and was the invention of Albert C. Crehore and Captain George O. Squier. Instead of the primary battery furnishing the current for the signals, sine waves of electromotive force are used. In the present methods of operating, a dot is transmitted by allowing the current from the battery to pass along the conductor in one direction, while a dash is produced by a current in the opposite direction, it being necessary to connect the cable with the earth between each signal. The new system employs an alternator whose armature rotates continuously, and the current is transmitted by means of small steel brushes making contact through perforations in a tape, which is fed into the apparatus synchronously with the electromotive force generated. The paper is perforated with four rows of holes, the first being used to transmit the signals corresponding to dots, the second to guide the tape through the apparatus, the third for dashes, and the fourth for making connection with the ground. These perforations are made by a machine, which differs but slightly from the ordinary perforator used in rapid telegraphy. The dynamo alternator furnishes a current of low frequency, which for an Atlantic cable does not exceed three or four oscillations per second, whereas in ordinary power and lighting circuits the frequency varies from twenty-five to one hundred and fifty per second. As the tape passes through the apparatus the brushes complete the circuit, making contact through the holes in the papers. The impulses transmitted are, of course, determined by the perforations, and the contact takes place when the current is approximately zero. In case of a dot, the impulse is transmitted in the form of a positive sine wave, whereas the dash is produced by the negative. The impulses thus transmitted are received by the regular duplex arrangement with condensers and siphon recorders, and the signals can be interpreted without difficulty by the present operators. By the sine-wave method more energy can be sent over the line than with the battery; consequently, with the same voltage there is a greater amplitude of wave or intensity of current at the receiving end. This enables the suspension of the recorder to be tightened and its natural period of oscillation to be quickened, so that the same definition of the signals and amplitude of motion are obtained at a higher rate of speed than could be used with the battery. The apparatus has been actually tested by use on the Atlantic cable, and has proved of value. It is simple and direct, doing away with the system of levers, which form an important part of the Wheatstone automatic transmitter, and is, therefore, particularly available for high-speed telegraphy. The new transmitter does away with the necessity of using batteries at cable stations, for with the alternating currents hand as well as automatic transmission can be used.

Pupin's New Method.—The other important method presented to the Institute at its May meeting involves improvements in conductors, so that an extension of the limiting distance for telephony and an increased rate of speed in operating submarine cables is attained. The system was invented by Professor M. I. Pupin (*q.v.*) of Columbia University, and is the result of a series of experiments undertaken to prove a mathematical theory for the propagation of electrical waves. By means of non-uniform conductors, constructed according to Professor Pupin's plan, it is possible to transmit the electrical waves of high frequency, such as are encountered in telephony and telegraphy, with much greater efficiency than could be obtained with conductors of the ordinary form.

For many years limitations in the working of cables and long-distance telephone conductors have been realized, and have been explained as caused by the static capacity of the cable or conductor. When the rate of transmission of signals over a submarine cable is raised above a certain point, the conductor fails to trans-

mit the impulses, and consequently the operation is confined within somewhat narrow limits. In telephony, where the number of periods of vibration per second is not a few, as in the case of the telegraph, but several hundred, the question becomes still more important and early fixes the limits of distance. The reason for this is, that the electrical waves by which the energy is transmitted along the conductor are attenuated or weakened in their course, and so much energy is dissipated before the destination is reached that the current is not sufficiently strong to accomplish the desired work. The transmission of electrical waves along a conductor is regulated by the inductance and capacity as well as the resistance of that conductor, and it has been known theoretically for some years that the attenuation would be diminished by increasing the inductance. This fact, however, has been until now a matter of mathematical theory, for notwithstanding experiments where inductance coils were introduced into the circuit, there has been no actual construction of conductors in which inductance was successfully used to increase the efficiency of transmission of electrical energy. In Professor Pupin's method a non-uniform conductor is constructed where the inductance is added at certain periodically recurring intervals, which are determined by the theory. In its simplest form this theory states that a non-uniform conductor of this description is as nearly equivalent to a corresponding uniform conductor as $\sin \frac{\phi}{2}$ is to $\frac{\phi}{2}$. The quantity ϕ is the angular distance between the points where the inductance is added, and bears the same relation to 2π , which corresponds to the wave-length, as the distance between two consecutive inductance points does to the length of the wave. As the wave-length diminishes the degree of equivalence also decreases, and consequently it is necessary to adjust conditions for the highest frequency that is to be employed on the line, the approximation then being still closer for the lower frequencies.

The manner in which the theory is applied can be illustrated from the following example: A telephone cable would have a resistance of 9 ohms per mile, a capacity of .074 microfarads and an inductance of zero. If now for every mile of cable, inductance amounting to .056 Henry is introduced, then the attenuation factor becomes much less, and in this particular instance 2 per cent. of the current starting at the transmitting end will reach the receiving apparatus, an amount which is quite sufficient for telephone work. A frequency of vibration of 750 periods per second is assumed, which is the highest frequency it is necessary to consider in telephone practice, and by calculation the wave-length over such a uniform conductor would be approximately 14.6. If then at intervals of one mile a reactance coil with an inductance equal to .056 Henry and a resistance of 9 ohms is placed, it is found that the difference in wave-length and the constant of attenuation from the wave-length and the constant of attenuation on a uniform conductor will be less than 1 per cent. Such correspondence at the highest frequencies is sufficient for telephony, as the ear cannot detect the small variations resulting from so small a difference, while for the lower notes matters would be still more satisfactory. In this way, we would have a conductor where there would be a minimum of attenuation, and as there is no reflection of the waves there would be no distortion.

The next application of the theory made by Professor Pupin is to a submarine cable 2000 miles in length, where it is necessary to have a much smaller constant of attenuation than in the instance just mentioned. Here there is much greater capacity and a conductor of longer length to be considered, so that the amount of induction to be added is correspondingly large. This fact and the large capacity make the wave-length shorter, about 2.43 miles; and in the transmission of a current over such a cable with the same frequency speed the inductance coils would have to be placed at intervals of 880 feet.

The truth of these theoretical considerations has been demonstrated by direct experiment in which the various properties of the electrical waves have been carefully determined. For this work an experimental cable was constructed in which the constants of the cable referred to above were incorporated. It was made of strips of tin-foil placed between sheets of paraffined paper and connected in sections, each section having a resistance of 9.5 ohms and forming with the adjoining section a condenser with a capacity of .074 microfarads. In the experimental work 250 such sections were employed, arranged in sets of 50, and a cable 250 miles in length was closely approximated. Each section had its separate connecting lines, which were led to a set of brass plates, with plugs, so that the circuit could be readily changed. With these condensers all the conditions of a cable were reproduced, and when the inductance coils were added the changes and improvements could be investigated. The inductance coils were constructed to have a resistance of 9 ohms each and an inductance of .058 Henry, being arranged as required by the theory for insertion at intervals of one mile, though any or all

could be cut out at will, or any other arrangement of the circuit made. The apparatus answered admirably for the study of long electrical waves, and for this purpose was used in connection with an alternator which furnished current of different frequencies. The wave-length, attenuation constant, and internal reflection were observed and studied, and curves plotted, showing the current at different points along the line with different frequencies and with different arrangements of the inductance coils.

In the experiments to demonstrate the feasibility of long-distance telephony over such a conductor, the same cable was used and the coils placed at intervals of one mile. Two sets of ordinary telephone instruments were connected to the line, and with the coils properly adjusted, conversation was carried on with great facility through the entire length of the cable. When the plugs which short circuited the inductance coils were inserted, the distinctness of speech was rapidly lost, and when there were 112 miles of the cable without the coils it was quite impossible to hear. Other arrangements of the coils were tried, but without success, the internal reflection acting to distort the voice and render speech unintelligible. From the experimental and scientific point of view, Professor Pupin's work seems most successful, and in the transition from experiment to practice there does not seem to be any marked difficulty, as tests in the field on a large scale have been made on aerial wire telephone circuits, which show the success of the method. Coils similar to those used in the laboratory are constructed at small expense and put on the cross bars of the poles after the manner of insulators. These coils, of course, must be made with particular reference to the circuit for which they are designed, after their constants have been determined by calculation. This method should not only benefit long-distance telephony by extending its range, but also by reducing the expense of the wire conductors, since it would no longer be necessary to employ the heavy copper wires now in use. The method of constructing non-uniform conductors for submarine and underground cables also does not present any serious difficulties, as the inductance coils could readily be incorporated within the sheathing and would be of small size, occasioning but little additional expense and presenting no difficulty either in the manufacture or the laying of the cable.

Wireless Telephony.—At the meeting of the British Association for the Advancement of Science at Bradford during the first week in September Sir William Preece described the progress of experiments which, it is claimed, have made wireless telephony possible as a commercial system. The first researches in this field date from 1894, when with two parallel wires four miles in length it was found possible to transmit articulate speech across a distance of 1.3 miles. The investigations were interrupted by the excitement due to wireless telegraphy, but were resumed in 1899, and in experiments performed at the Menai Straits it was observed that the best results were obtained when the parallel wires terminated in plates immersed in the sea. This fact showed that the induction effects were increased by conduction and that shorter wires could be employed. The apparatus used in these experiments consisted of ordinary transmitters and receivers without induction coils. The system was tried between a lighthouse on some rocks off Anglesey Island and the shore, the two wires being at an average distance of 2.8 miles, and also on the coast of Ireland, at Rathlin Island. It was claimed, though not corroborated by experimental evidence, that it would be possible to communicate between two vessels by stretching a copper wire between the masts and allowing the ends to dip into the water. This would be available, particularly for communicating between lightships and the shore, as these vessels are generally of wood, and there would not be the trouble that would be experienced with iron vessels. Not only can the lines described be used for telephony, but also for telegraphy.

Arc Lights.—Bremer, of Neheim, Germany, has constructed arc lamps which contain carbons treated with salts of calcium, silicon, and magnesia, with the result that the light is softened and at the same time is diffused by a white oxide which is formed within the globe or chimney. These carbons can be used either in direct or alternating current lamps, especially in search-lights, where increased penetrating power is secured by the richness in yellow rays.

Heat.—Researches in high-temperature thermometry have been carried on during the year by L. Holborn and A. Day, who have used an air thermometer with a platinum-iridium bulb. M. A. Dufour has constructed novel thermometers for high temperatures of quartz, which contain mercury or tin, and are available over a considerable range of temperature.

PIPE LINES. A wooden stave pipe line, having an interior diameter of 9 feet and a length of 2200 feet, was put in service in May, 1900, near Floriston, Cal., by the Floriston Pulp & Paper Company. The pipe furnishes water to seven water-wheels aggregating 5400 horse-power, there being a steel receiving-pipe, 9 feet in

diameter and 300 feet in length, through which the water flows to the wheels. The wooden stave pipe was made from 4x6-inch redwood lumber, the finished staves having a thickness of $3\frac{3}{4}$ inches. Sixty-four staves are required to complete the circle, and they are so arranged as to break joints, and thus form what is virtually a continuous structure. The butts of the staves are joined by steel tongues, which slip into slots sawed in the ends of the staves. There are no longitudinal joints between the staves, the edges being finished to the radii of the pipe. The staves are held together, and the internal pressure is resisted by steel hoops, or bands, composed of $\frac{3}{4}$ -inch round steel rods, fastened together by shoes and nuts. The bands are placed 10 inches apart at the upper end and approach each other more and more closely as the pressure increases until, at the lower end, where there is a head of 50 feet of water in the pipe, the bands are only $4\frac{3}{4}$ inches apart. Many miles of similar wooden stave pipe are in use in the United States, particularly in the West, but this is one of the largest in diameter, if not the largest, of wooden pipe lines of considerable length. One of the advantages of such pipe is the ease with which the material may be transported over rough country, owing to the small size and light weight of the component parts.

PITT-RIVERS. See FOX-PITT-RIVERS, A. H. L., LIEUTENANT-GENERAL.

PLAGUE. The present plague era began in 1894, and spread, in successive years, from Canton, China, to Hong Kong and other places in China, India (Bombay and vicinity), Formosa, Madagascar, Arabia, Suez, Malta, San Francisco, Persia, Portugal, Plymouth (England), Trieste (Austria), Brazil, Paraguay, Argentine Republic, Lourenço Marques, Honolulu and Manila. In 1900 it remained epidemic in many of the countries or localities named, and spread to new points. Gaining access to a country at the coast, in most cases, the tendency of the disease has been inland, and toward the heart of the country. A report from Sydney, N. S. W., dated May 12, 1900, stated that to that time 216 cases had appeared, with 73 deaths; while 1242 persons had been isolated because of contact with plague cases. Of these, 153 remained in quarantine, and 7 cases of plague had occurred among them. In June the disease increased in Australasia. From a focus in Melbourne several cases arose. In Sydney at that time 239 cases had been counted, with 82 deaths. A special rat poison was distributed by the government and the rats' bodies were collected. About 8000 persons were inoculated with Haffkine's prophylactic. (See SERUM THERAPY.) In June, 100 deaths were reported daily in Calcutta, and it was suspected that the actual mortality was double that number. There was no governmental control of affairs, and no authority used to send cases to hospitals. Rumors gained credence in September that several deaths from plague had occurred in seaports in France, but had been unreported to prevent a panic, which would have interfered with the success of the Paris Exposition. Rats in Paris and Lille were infected with a bacillus fatal to them, as a precaution. Plague in at least two cases appeared on the British steamer *Clan MacArthur* from Calcutta, via Port Said, to London, England. While quarantined at the mouth of the Thames, one death from plague occurred on this steamer. In June and July, 17 cases were reported in Smyrna, a former focus of bubonic plague; but as far as is known, there was no epidemic in Turkey. At Hamburg, in midsummer, there was one case of the dread disease in the person of a South American sailor, who died. From June to September the epidemic in India appeared to be abating, and the mortality to be declining. From 975 deaths a week the figures fell to 198 deaths a week for all India. But the mortality rose continuously through September, October and November. In Calcutta alone from 50 to 100 deaths a week were reported, and Bombay and Mysore State furnished larger quotas.

In Rio de Janeiro there were 27 cases and 13 deaths reported for the first week in June, 1900, and the disease was still in progress in Rio in September, as well as present at Buenos Ayres and Ceara. A case was brought to Montevideo in October by steamer. In the same month a sailor arrived on the Tyne from Rosario, Argentine Republic, went to Cardiff, Wales, and died of the plague. China, meanwhile, had been suffering from a mild epidemic of the same disorder, Hong Kong being a focus. A recrudescence of the disease was reported in Mauritius in October. The epidemic in Japan was confined to a few localities besides the city of Osaka, and was entirely controlled by the authorities, no case occurring after August 1. The first serious news as regards this country came when Glasgow was reported infected, August 31, eleven cases being then under observation, with one death at Govan, a suburb. Shortly after, two cases appeared in the port of New York City, and one died in quarantine. Alaska, in the Yukon district, reported the presence of plague. A vessel from the Philippines to London was quarantined because of a case. Finally, there appeared a few instances of undoubted bubonic plague in San Francisco, in November, springing from a typical case at first improperly diagnosed, and a large area, principally in the Chinese quarter of the city, was de-

clared infected. A Pasteur Institute, Paris, scientist is reported to have predicted that the disease will visit all Europe, as well as North and South America, in the summer of 1901. In combating it, reliance will be placed on inoculation, on destruction of rats, and on disinfection. Frosch claims that disinfectants and dry heat kill the bacillus of the disease, which may remain alive in the sputum of a patient for a month and a half. Frank G. Clemow says that monkeys, mice, squirrels, guinea pigs, porcupines, marmots, and rabbits have plague, but that these play but little part in the dissemination of the disease. In his opinion rats and fleas transmit the malady. A contract for the erection of a laboratory for the exclusive study of plague was made by the Department of Health of New York City in November. It will be equipped with all facilities for the cultivation of the germs of the disease, and for the diagnosis of suspected cases, without running the risks which would be unavoidable in the general laboratories in the city. At the Hygienic Laboratory of the United States Marine Hospital Service a large quantity of the prophylactic fluid of Haffkine has been prepared, and distribution has been made to national, State and local quarantine officers throughout the country.

PLANETOIDS. See ASTRONOMICAL PROGRESS.

PLATINUM. The production of platinum in the United States in 1899 amounted to 300 troy ounces, valued at \$1800. This was an increase of 75 ounces over 1899, but a decrease in value of about \$100. The world's production for 1900 will probably be 165,000 ounces. The limited production has something to do with the price of this metal, which now is nearly equal to gold in value. The Russian placer deposits supply over 90 per cent. of the world's production, and most of the balance comes from Colombia, South America.

PLATT, FRANKLIN, well-known geologist of Philadelphia, died July 25, 1900, at the age of 56. Instead of finishing his studies at the University of Pennsylvania, he joined the Thirty-Second Pennsylvania Gray Reserve Regiment during the Civil War, and in 1864 was appointed to the United States Coast Survey, being assigned to surveying work with the North Atlantic Squadron. He then served on the staff of General Orlando M. Poe, Chief Engineer of the Military Division of the Mississippi. In 1874 Mr. Platt was appointed assistant geologist of Pennsylvania, holding the post until 1881, when he became president of the Rochester and Pittsburg Coal and Iron Company. He was a member of scientific societies and a frequent contributor to the scientific magazines.

POLE, WILLIAM, F.R.S., civil engineer, and authority on whist, died December 30, 1900. He was born at Birmingham, England, April 22, 1814, and followed the profession of civil engineering, occupying a chair in this subject at the Elphinstone College, Bombay, from 1844 to 1847, and serving in a similar capacity at the University College, London, from 1859 to 1867. He was for a number of years lecturer at the Royal Engineer Establishment, Chatham, and served on many government commissions. From 1871 to 1883 he was the consulting engineer to the Japanese railways, and, in recognition of his services, he was decorated by the Mikado. As consulting expert to the British government he investigated many important questions, including the comparative merits of the Whitworth and Armstrong cannon, the gas and water supply of London, ordnance and armor, and other mechanical and engineering subjects. Elected a fellow of the Royal Society of London in 1861, Mr. Pole was chosen a vice-president in 1876 and 1899, and was also a member of the council of the Institution of Civil Engineers from 1871 to 1875, being an honorary secretary of that body from 1885 to 1896. In addition to his engineering achievements, Mr. Pole was an able musician, and received the degrees of Bachelor of Music (1860) and Doctor of Music (1867) from Oxford. He was for a number of years examiner in music at the University of London and was the author of *The Philosophy of Music* (1879) and *The Story of Mozart's Requiem* (1879). Mr. Pole's name is associated with the game of whist as a recognized authority, and in 1895 he published a scientific treatise, entitled *The Evolution of Whist*. The most important of his many scientific works are, *Treatise on Cornish Pumping Engine* (1844); *On the High Pressure Steam Engine* (1848); *On the Use of Iron in Construction* (1872); *Scientific Chapters in the Lives of Robert Stephenson and I. K. Brunel* (1864 and 1870); *Life of Sir William Fairbairn, Bart.* (1877) and *Life of Sir William Siemens* (1888).

POLITICAL AND SOCIAL SCIENCE, AMERICAN ACADEMY OF, was founded in Philadelphia in 1889, incorporated in 1891. President, Samuel McCune Lindsay, University of Pennsylvania; secretary, James T. Young; post-office address of the academy, Station B, Philadelphia. The purpose of the academy is to promote the scientific study and investigation of the social sciences, economics, politics, and sociology. Special attention is paid to the portions of this field not included in the programme of other societies. The academy publishes the *Annals*, a bi-monthly periodical containing scientific papers on social and economic

questions of the day, book notes, and reviews, and departments of notes on municipal government, sociology, charities, colonial government, and industrial topics. The Notes give a good review of current events. The academy publishes also special monographs and translations of foreign works, which are sent to its members as supplements to the *Annals*. It holds monthly meetings during four of the winter months, at its headquarters in Philadelphia. In April of each year an annual meeting of two days' duration is held, at which a single topic is discussed in its various aspects. Topics in the forefront of public discussion are usually chosen, and the best available scientific material on the subject brought together; thus, in 1899, the Foreign Policy of the United States; in 1900, Corporations and Public Welfare. The plans for 1901 provide for a discussion of the general topic: America's Race Problems.

At the fourth annual meeting (Philadelphia, April 19-20, 1900) the papers on Corporations and Public Welfare were divided into four groups: I. The control of public service corporations; II. Influence of corporations on political life; III. Combination of capital as a factor in industrial progress; IV. The future of protection. A brief summary of some of the more important papers dealing with corporations may be of interest. Prof. L. S. Rowe, of the University of Pennsylvania, in discussing the *Possibilities and Limitations of Municipal Control*, took exception to the now commonly accepted view that corporations should be made to contribute the largest possible sum of money to the public treasury with a view to reduction of taxation, and thought "that the real test of efficient municipal control is to be found in the cost and quality of service rather than in the money returned for the franchises granted." For, "under ordinary circumstances, a reduction in taxation of 5 mills, or even 5 cents, per \$100 valuation, means little or nothing to the welfare of the community, no matter how cordially welcomed by the taxpayer. On the other hand, a reduction of street railway fares from 6 to 5 or 4 cents, or, what is more important, a change in motor power which increases the rate of speed from 7 to 15 miles an hour means a revolution in housing conditions, and a strengthening of the industrial efficiency of the whole community." Similarly, in the case of other services. Hence, the municipal control of corporations doing public service must be directed with a view to the effect of that service on the welfare of the citizens and on industrial progress rather than to a reduction of the tax rate. It was also pointed out by Professor Rowe that the growing extension of the service of electric, gas, and water companies beyond city lines is making them less and less amenable to municipal control, and that before long the State will be obliged to take over that branch of governmental regulation from the municipalities, just as the federal government had to take over the regulation of railways from the State on the extension of the railways beyond State lines.

In his paper on the *Control of Public Service Corporations—Financial Control—Capitalization*, Bird S. Coler, comptroller of the City of New York, pointed out the evil of excessive over-capitalization resorted to by all franchised corporations to conceal the high profits made by them. As a remedy for that, he advocates "uniformity of accounting methods to be prescribed by the comptroller for corporations engaged in the same business as, for instance, street railroads, gas and electric illuminating companies, etc.; and, second—that these books of account should at all reasonable times be open to the inspection of the comptroller or his representative." He would "provide for financial statements certified by disinterested accountants and a strict official scrutiny of the accounts of all corporations, the stock and bonds of which are offered as an investment to the general public."

The other two papers on *Difficulties of Control*, as illustrated in the *History of Gas Companies*, by Professor John H. Gray, of the Northwestern University, and on *Regulation of Cost and Quality of Service*, as illustrated by street railway companies, by Professor F. W. Speirs, dealt with the history of municipal control in the respective spheres as shown by the experience of several American municipalities.

The *Influence of Corporations on Political Life* was the subject of the annual address by the Hon. William Lindsay, United States senator from Kentucky. The speaker dwelt on the modern evil of the growing influence of corporations on political life due to their direct influence and participation in the politics of the country. "Corporate influence intended to affect political life, officially thrust into party contests or officiously brought to bear on legislative action, is inconsistent with good government, a palpable abuse of the corporate privilege, and should be met with public reprobation whenever and wherever it may make its appearance;" that was the keynote of the address which concluded with the expression of the hope that the country will overcome the menacing evil as it had done on similar occasions in the past.

In a paper on the *Evolution of Mercantile Business*, Mr. John Wanamaker traced the development of the department store whose beginnings are discerned in the end of the '70's, when the first attempts in that direction were made as the result of the

experience gained from the Centennial Exhibition of 1876. The rapid extension of the department store system is attributed by Mr. Wanamaker to the superiority of its business methods and its economic advantages over the retail establishment of the old type, which was "badly handicapped as a rule by (a) small capital, commonly borrowed by long credit for merchandise; (b) the necessity of selling upon credit; (c) the necessity for a larger percentage of profit; (d) impossibility of utilizing to advantage store and people all seasons of the year; (e) non-accumulation of capital. The consequence was, according to accepted statistics, that but four out of every hundred merchants succeeded in business." All these drawbacks have given place to decided advantages in the case of the department store. Its chief effects upon prices have been to lower them, both to the producer and to the consumer. The former is able to make a larger profit in spite of the lower price, because of the smaller expense in selling his goods due to the elimination of the middle man, and the consumer is proving the advantage of the department store to him by his constantly increasing patronage of the same. The effect on labor has also been beneficial. The employees of department stores work much shorter hours than those of the smaller retail shops, and, as a rule, receive higher wages. At the same time, the facility with which any one can enter the field, makes further combination of the department stores into a close corporation or trust impossible, and the business must continue on a strictly competitive basis.

POLITICAL ECONOMY. By far the most important work on pure economics that has appeared in 1900 is Professor Clark's *Distribution of Wealth* (published by the Macmillan Company). Although the theories developed in this work had been advanced from time to time in previous writings of the author, they are for the first time presented here in complete and systematic form. Whether one agrees with all of Professor Clark's conclusions or not, there has been no voice of dissent that his work marks an epoch in American economics. Like all modern economists, Professor Clark parts company with the classical school in the methods of classification of economic phenomena and the analysis of their ultimate causes. The traditional subdivision of economics into production, exchange, distribution and consumption is rejected because social production, as distinguished from individual production, and the only kind in which political economy is interested, "includes exchange and distribution." In a similar manner, exchange, i.e., the determination of relative values of commodities, determines, in the author's opinion, "the distribution of social income among producing groups," and since distribution is considered by him the result of social organization, it is treated as the central problem of economics. In the present volume he analyzes the laws of distribution in a hypothetical social organization, which he calls a static society; a condition in which men are supposed "to produce to the end of time the same kinds of goods by the same processes. Their tools and materials might never change; and they might not alter, either for the better or for the worse, the amount of wealth that industry would yield." The absence of all hindrances to free competition completes the essential features of a static society. A future volume is to deal with the dynamic laws governing the growth of society, and will note the modifications that have to be introduced to make the static laws laid down in the present volume apply to society as it actually exists.

In treating the phenomena of value, interest, rent and wages, Professor Clark insists on the prevalence of one general law in economic life which governs all of these phenomena alike; that is the law of diminishing returns. It is in that and in the sharp line of distinction he draws between capital and "capital goods," meaning by the latter all concrete forms of wealth used for the production of goods, that Professor Clark differs from the Austrian economists, though agreeing with them in opposing the methods and conclusions of the classical school. Rent (of land), interest and wages are treated as varieties of economic rent, and, as Professor Clark puts it, "all rents are true products, which can be traced to distinguishable agents." According to this, wages, or the rent attributable to labor as an agent, or factor, of production, are determined by the "specific productivity of labor," or what labor creates over and above all other factors; this is determined by "what labor can earn when employed on waste land." In terms of capital, wages are determined by the final unit of labor which it pays to add on to the existing capital in the constantly diminishing series of returns. In a similar manner, interest, or the rent of capital, is determined by the specific product of the last unit of capital which it pays to apply to the existing amount of labor in the constantly diminishing series of returns. "In a static state the two rents make up the whole of the social income." In other words, the profits of the entrepreneur, the man who manages an individual undertaking on his own initiative and risk with borrowed money, equal zero in a static state. It is only in a dynamic state, where certain friction impedes the workings of competition, that profits exist; but just so soon as competition enables other entrepreneurs to

produce and sell goods on the same basis as the first entrepreneur, the profits of the latter, which represent the difference between the cost of production in his establishment and that in other establishments with average facilities, are wiped out.

Similarly in the matter of values, it is the final utility in the commodity, beyond which additional pleasure would be more than balanced by increased pain or sacrifice, that is instrumental in determining prices. And since every commodity possesses various kinds of utilities for different sets of consumers, it is the sum of those utilities to society as a whole that determines the value of an entire article. The practical conclusion of the work is that the rate of wages must constantly rise, and the rate of interest must fall, since capital increases faster than population, and that, according to the law of diminishing returns, necessarily makes the returns of the last increment of capital ever smaller, as compared with those of the last unit of labor.

Somewhat preceding Professor Clark's book in point of time, though not in importance, is Mr. John A. Hobson's work on *The Economics of Distribution*, which aims at the same object, though by somewhat different means. The two works, representing one the latest American and the other the latest English thought, are alike in striving to discover one general law which can be uniformly applied to the explanation of all the economic phenomena. Both treat the returns of land, labor and capital as varieties of rent. But they differ in ascribing the phenomena to different causes. According to Clark the determining cause is the law of diminishing returns applicable to capital, labor and consumers' wealth as well as to land. According to Hobson it is the same process of bargaining which determines the prices of any commodity in the market, modified by an element of "forced gain" by which he means a specific gain of one of the two marginal parties in the buying and selling transaction. Mr. Hobson does not believe that a purely marginal transaction, i.e., one where neither of the parties gains or loses, ever takes place except in the case of a few articles for which there is an open market, such as corn, cotton or gold. Usually, one of the parties is stronger or more cunning, as a result of which "all processes of bargaining or competition by which prices are attained and the distribution of wealth achieved, are affected by certain elements of force which assign "forced gains" and other elements of "economic rent" to the buyer or the seller. Contrary to "differential gain," which represents the difference between the marginal price and the one actually paid (also called consumer's rent), and which is determined by price, this "forced gain" is itself a determinant of price.

The practical conclusion at which Mr. Hobson arrives, is that "there is thus established the existence of a large fund, partaking of the nature of those monopoly and differential rents, long ago recognized in the case of land, which furnish no stimulus to voluntary industrial energy, and which can be taken for public service by taxation without injury to industry."

While Clark thus regards rent, interest and wages from the point of view of productivity and seeks to trace them back to their sources, which he finds in the respective contributions to the common fund made by each factor of production, Hobson regards rent, interest and wages as so many varieties of prices paid to the owners of the respective factors of production upon a basis of "forced" bargains.

The two books by no means exhaust the contributions to economic thought in the closing year of the century. The host of writers discussing various aspects of pure economic theory in the magazines is so large that no attempt can be made here to enumerate them except to mention the more important magazines in that line. These are the *Quarterly Journal of Economics*, the *Political Science Quarterly*, the *Journal of Political Economy*, and *The Yale Review* in the United States; the *Economic Journal* in Great Britain; the *Jahrbücher für Nationalökonomie und Statistik* in Germany; the *Revue d'Economie Politique* and the *Journal des Economistes* in France; and the *Giornale degli Economisti* in Italy. A large number of works have been written in Europe elaborating some one or more particular questions in economic theory, and, as has been the case for the last few years, the Germans and Italians are the most active. The most important of these is Professor Böhm-Bawerk's *Einige streitige Fragen der Capitalstheorie*, 126 p.; others to be mentioned are A. Kostanecki's *Der Wirtschaftliche Wert vom Standpunkte der Geschichtlichen Forschung* (Berlin, 215 p.), in which the author rejects both the classical or labor theory of value and the Austrian or marginal utility theory, and attempts to outline a new theory on the conception of ownership. Professor Cossa, the well-known economic writer, sums up the recent best literature on the question of capital and interest in a new work, *Principii elementari e la teoria dell' interesse*. Mr. Einandi, in his *La Rendita Mineralia* (Turin, 462 p.), presents an exhaustive study of the economic law of rent of mines, to which is added a history of mining and legislation in regard to the same. Dr. Manteuffel discusses the economic effects of

saving in *Das Sparen, sein Wesen und seine Volkswirtschaftliche Wirkung* (147 p.), and Professor Girard gives us a history of political economy in antiquity and the Middle Ages in *Histoire de l'économie sociale jusqu'à la fin de XVIIe siècle*. Finally, the year 1900 saw the completion of that great undertaking, Palgrave's *Dictionary of Political Economy*. See also ARBITRATION; LABOR; TRUSTS; ECONOMIC ASSOCIATION; POLITICAL AND SOCIAL SCIENCE, AMERICAN ACADEMY OF.

POLO. A match held at Hurlingham, England, between a British team and a four made up of American polo players visiting in England, attracted considerable interest in polo circles in the United States during the summer of 1900. With the exception of Foxhall Keene, who is in the front rank of American riders, the visiting players represented only average playing ability. These four players, however, having organized a team, offered a challenge for the American cup, a trophy presented in the United States in 1886 for international competition, and won in an exciting match by the Hurlingham club, of England. This cup had not since been played for in an international match. It was of interest that one of the players on the defending team in 1900 was John Watson, the famous veteran who played on the original team which captured the American cup at Newport. In the report of the game cabled to this country it was stated that the Americans played a fast and plucky game. The first goal for England was made in the second period, after which the home team scored rapidly in spite of the resolute defence of the Americans. America made a goal in the fifth period amid great applause, and soon after scored another. England, however, proved too strong, winning finally by 8 to 2. American polo players felt well satisfied with the game, considering that the challenging team had been brought together at such short notice, and were of the opinion that with a representative team this country would have strong chances of defeating the British. The whole incident reflects the development of the game in this country in the past few years, and has led to the talk of an international match for the near future. Mr. Keene was assured by English poloists that an invitation to visit America and play a series of games would be seriously considered, and upon his return to the United States there was a strong feeling that an international match in this country might be arranged for 1901. At the close of 1900, however, no definite action had been taken. One obstacle is the reluctance of the British players to subject their valuable high-bred ponies to the dangers of an ocean voyage. The annual tournament of the United States, under the auspices of the Polo Association, was held June 25-July 5 on the parade ground at Prospect Park, Brooklyn, New York City, with a daily attendance of over 10,000 spectators. The championship was won by Dedham, whose team vanquished Meadowbrook and Westchester in the final games, while a junior championship, held for the first time, was won by the Philadelphia Country Club.

POOL. Alfred De Oro, of New York, who in 1899 captured the world's championship in continuous pool from J. R. Keogh, of Scranton, Penn., again won from the latter in 1900. Having, in accordance with the governing conditions, held the gold medal for a year without defeat, the trophy became his personal property. The 1900 match between De Oro and Keogh was played at New York, April 19-21, the totals for the three nights' play being: De Oro, 600; Keogh, 481. The championship conditions are 600 balls, 200 each night.

PORT ARTHUR. See CHINESE EMPIRE (paragraph Cities of China).

PORTER, SARAH, educator, died February 18, 1900. She was a sister of the late Noah Porter, president of Yale College, and was born at Farmington, Conn., in 1813. She became the head of the Farmington school for girls.

PORTO RICO, the smallest of the Greater Antilles Islands, lies east of Haiti, from which it is separated by Mona Passage. It is in shape roughly rectangular, its length being slightly over 100 miles and its breadth about 36 miles. Its approximate area is 3600 miles, or three-fourths of the area of the State of Connecticut. A low and irregular range of hills extends nearly across the island from west to east, culminating toward the northeastern part of the island in the summit of El Yunque, 3609 feet in altitude. Elsewhere the hills vary from slightly under 2000 feet in height to slightly over 3000. These hills form the rainshed of the island, the land sloping gently on the north and steeply on the south, with broad playas at the foot of the hill. The best harbor is that of San Juan, on the north; on the south the only harbors for vessels of ordinary draught are those of Ponce and Guanica. The island of Vieques, however, lying off the east coast, has several excellent harbors. The climate is nearly uniform, the annual temperature at San Juan ranging in different years from 78° to 82° Fahrenheit. Heavy rainfalls, occasioning considerable damage, are of frequent occurrence. The annual rainfall varies from about 60 inches at San Juan to 100 inches in the highlands of the interior.

Agricultural Conditions.—In the returns of the Porto Rican census of 1899 it is

stated that of the total area of Porto Rico—3606 square miles—2743 square miles were included within farms. The area under cultivation was 747 square miles, or about 21 per cent. of the entire area. These figures are in strong contrast with those of Cuba, only 29.9 per cent. of the area of that island being included within farms, and only 3 per cent. being under cultivation. The total number of farms in Porto Rico being 39,021, and the average farm had an area of 45 acres, of which 12 were cultivated. These figures are in marked contrast with those of the United States, where in 1890 the average farm had an area of 137 acres, of which 78 were improved. Of the total cultivated area of Porto Rico 41 per cent., or 180,289 acres, was planted in coffee. The number of coffee plantations was 21,693, averaging about 9 acres to each plantation. The greatest number of coffee plantations was in the western and interior portions of the island, where the hillsides produce more favorable agricultural conditions. Sugar, the second crop of importance in Porto Rico, took up 15 per cent., or 80,034 acres, of the cultivated land, there being 2336 plantations, averaging about 31 acres each. The production of sugar was carried on mainly in the neighborhood of the coast, and particularly in the eastern and southeastern parts of the island, Ponce and Humacao being the most important departments in this regard. Tobacco is grown on 15,324 acres, while other crops of importance are bananas, taking up 14 per cent. of the cultivated area, and sweet potatoes, 8 per cent. Of all the farms in Porto Rico, 71 per cent. was owned by the whites occupying them and 22 per cent. by negro occupants. Of the cultivated area of Porto Rico, 82 per cent. was owned by whites and 7 per cent. was rented, 9 per cent. was owned by colored people and 1 per cent. was rented by them. In other words, 91 per cent. of the cultivated area of the island was occupied by its owners and only 8 per cent. was rented. These proportions were in marked contrast again with those of Cuba, where only 43.5 per cent. of the land is owned by its occupants, while 52.4 per cent. is rented. It can hardly be doubted that this general ownership of occupied land in Porto Rico has operated strongly to preserve the peace and contentment of the island.

Commerce.—The total value of the exports into the United States from Porto Rico during the fiscal year ending June 30, 1900, was \$3,078,648; imports into Porto Rico from the United States, \$4,640,449; total foreign trade, \$7,719,097, as against \$5,865,675 in the preceding year. The new tariff act relating to Porto Rico has been followed by a marked increase of the commerce between the island and the United States. The act became effective May 1, 1900, and the exports from the island during the succeeding two months exceeded by nearly 60 per cent. those of May and June, 1899. The imports into the island showed an even larger growth, being in May and June, 1900, \$1,533,774, as against \$651,411 in May and June, 1899, an increase of over 100 per cent.

Roads.—In the report of the commissioner of interior, dated September 15, 1900, more and better roads were stated to be the principal and most pressing need of Porto Rico. At the time of the Spanish War the only really good road on the island was that extending from San Juan, on the north, to Ponce, on the south, with a branch from Cayey to Guayama, altogether about 98 miles. Since then several short stretches of road have been built by the American authorities and others are under construction; but it is still true that "the whole interior of the island is practically without other means of reaching a market or communicating with adjacent towns than over dilapidated and dangerous trails, often in the rainy season impassable for days." This is the more serious in an agricultural country, where prices depend mainly upon an export market. The cost of building permanent roads sufficient to remedy these evils was stated by the governor, in his message to the Legislature on December 3, to be in the neighborhood of \$4,000,000. This large cost was due partly to the nature of the country and partly to the fact that the heavy rains necessitated an unusually solid construction. For the same reasons the cost of maintaining the roads when built would probably use up all the current revenue available for road purposes. Out of the customs to be refunded to Porto Rico by the United States nearly \$1,000,000 should be available for road construction; to raise the remaining sum necessary or a portion of it, the governor suggested that debentures be issued in such amount as was prescribed by the executive council and approved by the governor.

Banks.—The banking institutions of Porto Rico, excluding such establishments as do a banking business in connection with other activities, are: The Bank of Porto Rico, capital, \$900,000; the Credito y Ahorro Ponceno, at Ponce, capital, 200,000 pesos; the Banco Territorial y Agrícola, at San Juan, capital, 1,400,000 pesos; the Banco Popular, at San Juan, a savings bank, capital, 5000 pesos, and the American Colonial Bank, at San Juan, capital, \$400,000. The American Colonial Bank was incorporated under the laws of the State of West Virginia on April 4, 1899. It is a bonded depository for the custody of United States and Porto Rican funds.

Finances.—In his message to the Legislature, which met on December 3, 1900,



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SCENES IN PORTO RICO.—1. A Porto Rican Sugar Plantation—Clearing the ground for a new crop of cane. 2. In the Hill Country of Porto Rico—A typical group of Peasants, with their native ponies. 3. Porto Rican Agriculture—The primitive wooden plow drawn by oxen.

Governor Allen stated that the expenses of state for the year ending June 30, 1900, amounted to \$1,984,645. From May 1 to November 1 there was collected from all sources \$1,041,696, while in the same time \$832,028 was expended, thus showing that "there was every prospect of sufficient income to meet the current demands of the budget." In addition to the surplus of \$209,668.60 remaining on November 1, a balance of \$1,373,827.97 stood to the credit of Porto Rico from the United States "Customs Refunding act," thus making a total surplus of \$1,583,496. The income proper of the island was derived largely from customs duties, but the governor reminded the Legislature that by congressional act duties between the United States and Porto Rico would cease on March 1, 1902. It thus became advisable for the Legislature to institute a scheme of taxation which would be in good working order prior to that time. Legislation was, therefore, recommended to provide a direct tax on the assessed value of real and personal property, an excise tax on liquors, tobacco, and some other articles, and an inheritance tax on the devolution of property. The excise tax, which was made possible by the exemption of Porto Rico from the internal revenue laws of the United States, could probably be made much lower than those collected in the States and yet be sufficient for the needs of the government. An issue of bonds was also recommended for the purpose of roads, as mentioned in the preceding paragraph.

Census.—The report of the census of Porto Rico, published late in 1900, shows that in November, 1899, the population of Porto Rico was 953,243. The last previous census, taken in 1887 under Spanish authority, showed a population of 798,565. Porto Rico has 264 persons to a square mile. This density of population is about the same as that of New Jersey, three times that of Illinois, and seven times that of Cuba. However, the number of persons in Porto Rico living in communities of 1000 or more inhabitants is only 203,792, or 21.4 per cent. of the total population. Similar figures for Cuba show that 47.1 per cent. of the population of that island is urban. The largest cities in Porto Rico are San Juan, with a population of 32,048; Ponce, with 27,952 inhabitants; Mayaguez, with 15,187, and Arecibo, with 8008. The whites, or Caucasians, of Porto Rico number 589,426, or 61.8 per cent. of the population; and the "colored," including those of mixed blood, number 363,817, or 38.2 per cent. of the population. The number of persons in Porto Rico over 60 years of age amounts only to 4 per cent. of the population. This small per cent. is ascribed partly to the rapid increase in population and partly to poverty, unsanitary conditions, and ignorance regarding the elementary rules of hygiene. On the other hand, the percentage of children under 10 is extremely large, being 30.9, as against 22.7 per cent. in Cuba and 24.3 per cent. in the United States. Of persons over 10, 48 per cent. are reported as engaged in gainful occupations in Porto Rico, 51.2 per cent. in Cuba, and 47.9 per cent. in the United States. The proportion of workers in different occupations in Porto Rico and the United States (census of 1890) is as follows: Agriculture, fisheries, and mining, Porto Rico, 62.8 per cent.; United States, 39.7 per cent.; domestic and personal service, Porto Rico, 20.5 per cent.; United States, 19.2 per cent.; manufacturing and mechanical industries, Porto Rico, 8.4 per cent.; United States, 22.4 per cent.; trade and transportation, Porto Rico, 7.6 per cent.; United States, 14.6 per cent.; professional service, Porto Rico, 0.7 per cent.; United States, 4.1 per cent. When it is remembered that even in Cuba the industries of agriculture, fisheries, etc., engage only 48.1 per cent. of the workers, the primitive and backward state of commercial affairs in Porto Rico and the predominance of agricultural interests is clearly manifest. The people in Porto Rico and Cuba are classified as follows with regard to literacy: Having higher education, Porto Rico, 0.5 per cent.; Cuba, 1.2 per cent.; able to read, Porto Rico, 16.6 per cent.; Cuba, 36 per cent. In the year preceding November, 1899, 26,212 children between the ages of 5 and 17, or 8 per cent. of all the children between those ages, attended school. Of the total population of Porto Rico, the large per cent. of 69.7 are single. Excluding persons under 15 years of age and considering only what may be deemed the adult population, it is found that 45.9 per cent. are single. In the United States (1890) only 36.9 per cent. are single, but in Cuba 53.4 per cent. are single. Of the total population of Porto Rico, 16.6 per cent. are married, and 8.8 per cent. live together in consensual, though not legal, unions. Classified by race, it appears that 19.1 per cent. of the native whites and 12.0 per cent. of the colored race are married, and 7.0 per cent. of the whites and 11.8 per cent. of the colored race live in consensual unions. The males of voting age in Porto Rico number 201,071. Of the whites of Porto Rican birth, 35,397 are literate; of the colored, 12,576 can read. Under an education qualification for voting, therefore, 47,973 persons, or 25 per cent. of the native males of voting age and 24 per cent. of all males of voting age, would be entitled to vote. The per cent. of literates to all males of voting age is as follows in the seven provinces of the island: Aguadilla, 23 per cent.; Arecibo, 22 per cent.; Bayamon, 33 per cent.; Guayama, 24 per cent.; Humacao, 22 per cent.; Mayaguez, 32 per cent., and Ponce, 30 per cent.

Education.—There were in the school year 1899-1900 15,440 boys and 8952 girls enrolled in the schools of Porto Rico. The schools suffered much from the effects of the hurricane of August 8, 1899; but their development has, in spite of this, been very rapid. The experiment of giving local or town committees the power of selecting school buildings and appointing teachers was tried with small success, and the results of American efforts at providing for popular education had to be supplemented by the action of the central board before the schools were brought up to their present condition. A sum of \$413,000, or 12 per cent. of the insular revenues, was used for educational purposes (only half of the proportion used for the same purpose in the United States); yet the cost of each pupil per capita of population was \$13, as against \$9 in the State of Minnesota, for example. The number of teachers was half that of the number of police, while twice as much was spent on the latter as on the former. English was taught in all the schools, but progress was difficult, owing to the semicivilized state of many of the children. There is an American school for both sexes in Ponce, where instruction is given entirely in English under American teachers. The only public school building erected for the purpose was in San Juan, and was occupied by a model and training school, courses being in English under American instruction, about 30 per cent. of the pupils being Americans. Land has been bought and \$20,000 appropriated for the building of a normal school at Fajardo, on the northeast coast of the island. Professor Martin G. Brumbaugh of the University of Pennsylvania was appointed in 1900 commissioner of education for Porto Rico, and took up his duties in San Juan on August 6. His official report, dated October 15, 1900, states that the model and training school, which contained also the offices of the Department of Education, was destroyed by fire on July 1, 1900, together with all the records of the department, so that complete statistics are wanting. He reports, nevertheless, that for the year 1900-01, 800 schools were opened, an increase of 30 per cent., with 800 teachers and 38,000 pupils, though there are still 300,000 children of school age for whom there is no school accommodation. There are 16 English supervisors, and in the summer of 1900 teachers' institutes were held in 15 towns in the island.

Congressional Legislation for Porto Rico.—A tariff and civil government bill for Porto Rico was passed by the 56th Congress, after much discussion in regard to the tariff part of it, and in spite of energetic protests from the press and a number of able Republican statesmen. The matter in debate was whether or no there should be free trade between the United States and Porto Rico. In his annual message on December 5, 1899, President McKinley had reminded Congress that Porto Rico, since her cession by Spain, had lost her free markets in Spain and Cuba, while the continuance of American tariffs against her had deprived her of any compensatory advantage. It is "our plain duty," the President declared, "to abolish all customs tariffs between the United States and Porto Rico, and give her products free access to our markets." In conformity with this recommendation, Mr. Payne, chairman of the ways and means committee, introduced into the House on January 19, a bill providing that no dues should be collected on goods shipped out of Porto Rico to this country, or *vice versa*. This bill was referred to the ways and means committee, and it was generally supposed that favorable action would be taken thereon. But on February 8, a majority report submitted by the committee recommended that all goods shipped either way between Porto Rico and the United States be charged 25 per cent. of the rate imposed by the Dingley tariff; the money so collected to be used for the benefit of Porto Rico. In accounting for this change in Republican policy, the leaders stated that the military governor of Porto Rico had made it clear that funds for the island were immediately needed. It would be poor policy to bond Porto Rico, at the beginning of its republican career, and it would tend to pauperize the people to make a direct appropriation from the federal treasury; so nothing remained but to impose a tariff. In regard to the constitutional power of Congress to do this the majority report took the following position: The provision of the Constitution that "all duties, imposts and excises shall be uniform throughout the United States" does not prohibit Congress from making a differential tariff against Porto Rico. For "the term United States as used in the Constitution has reference only to the States that constitute the federal union, and does not include Territories." In proof of this it is to be noted, that in various treaties wherein the United States annexed new territory formal stipulations were made that the people annexed should possess certain rights, guaranteed to the people of the United States by the Constitution; thus showing clearly that territorial annexation did not of itself give the people of such territory constitutional rights. Now, in the annexation of Porto Rico, no guarantees of any kind were made to the Porto Ricans, but on the other hand, it was expressly declared by the Treaty of Paris that "the civil rights and political status of the native inhabitants of the territories ceded to the United States should be determined by the Congress." Hence the power of Congress to legislate for Porto Rico is plenary, and under that power Congress may prescribe

for Porto Rico whatever duties it sees fit. The minority reports submitted by the ways and means committee held that no power was possessed by Congress, as held by the majority report, to impose a tariff upon Porto Rico. The question, they said, is not whether an annexed territory is part of the United States in the constitutional meaning of the words United States, and whether, therefore, Porto Rico shall be legislated for as part or as not part of the United States. The real question is whether the limitations imposed by the Constitution upon the legislative power of Congress are of universal validity or whether they apply only to the legislation which Congress may make for the States. If the limitations and prohibitions of the Constitution are of universal validity then Congress cannot pass the Porto Rican tariff bill; if they are not of such validity then the people of Porto Rico are simply subjects, having no legal rights. Nor would Porto Rico alone suffer under this construction of the Constitution. Congress might also impose customs duties on the minerals and ores of Arizona and New Mexico, the furs and fish of Alaska, the lumber of Oklahoma, and on importations and exportations of every kind between these Territories and the States. The subject of the constitutional status of Porto Rico, thus formally introduced to the country by the House, was everywhere taken up and debated by the press. However the matter might be finally determined by decision of the Supreme Court, it was made evident that the people at large had not contemplated holding Porto Rico at such arms' length as to make possible a differential tariff. Such sharp criticism was directed against the bill that it was amended to impose taxes of only 15 per cent. of the rates called for under the Dingley tariff, and for two years only. In this form it passed the House on February 28, by a vote of 172 to 161. On March 2, and while it was pending in the Senate, the President sent a special message to Congress asking that \$2,095,455, the amount already collected on importations from Porto Rico to the United States, be appropriated by Congress for the needs of the island. The appropriation was made. Now, as it had been frequently stated, that the reason for a tariff against Porto Rico was the need for a revenue of \$2,000,000 or less annually, it was thought by many that this reason had been nullified by the Porto Rican relief measure. However, the tariff bill was favorably reported to the Senate by the committee on Pacific Islands and Porto Rico, in the shape of a rider attached to the Senate bill providing for the civil government of the island. On March 27, the tariff was limited, by amendment, to a period of two years, and was to cease sooner if the local government could devise means to raise the needed revenue by internal taxation. The amount which it was expected would be collected under this tariff was about \$1,250,000 annually. On April 3 the Senate passed the Tariff and Civil Government bill by a vote of 40 to 31. On April 11, the House passed the bill by a vote of 161 to 153, and on the following day it received the President's signature and became law. *The Outlook* summarized the probable causes for the maintenance of the tariff clause as follows: (1) The representations of various interests—the cane-sugar growers in Louisiana, the beet-sugar growers in Nebraska, the tobacco companies in Connecticut, and the fruit producers in California; (2) the protests of labor organizations fearing an influx of low-priced and contract labor; (3) the protests of ultra-protectionists alarmed lest a supposed basic principle of the Republican party, namely, protection, should be threatened with ultimate extinction by reason of free-trade with Porto Rico; (4) the supposed desirability of establishing a test case for a Supreme Court decision to establish the right of Congress to legislate for a dependency without being hampered by the restraints of the Constitution. See UNITED STATES (paragraph Constitutional Status of Porto Rico and the Philippines).

On April 24, the House passed the emergency resolution previously passed by the Senate on April 19, providing for the administration of civil affairs in Porto Rico pending the appointment and qualification of the civil officers under the Civil Government Law.

Tariff and Civil Government Bill.—The Act of Congress "temporarily to provide revenues and a civil government for Porto Rico and for other purposes" went into effect May 1, 1900. Its main provisions are as follows: Articles imported into Porto Rico from other countries than the United States shall be taxed the same duties as articles imported into the United States from foreign countries. Merchandise imported into the United States from Porto Rico and *vice versa* shall pay 15 per cent. of the duties called for under the Dingley tariff, but articles hitherto admitted free of charge shall, with the exception of coffee, continue to be so admitted. In no event shall duties be collected on imports into the United States from Porto Rico or *vice versa* after March 1, 1902, but duties shall be discontinued before that time if, and as soon as, the legislative assembly of Porto Rico devises means to defray its government expenses by local taxation. The moneys collected under the tariff are to be expended by the President, in his discretion, for the benefit of Porto Rico, and any unexpended balance, when the act ceases to be operative, is to be given over to the treasury of Porto Rico. Former Spanish subjects, then and now inhabitants of

Porto Rico, excepting those who have previous to April 11, 1900, renewed their allegiance to Spain, shall be deemed citizens of Porto Rico, entitled to the protection of the United States. They and citizens of the United States residing in Porto Rico, "shall constitute a body politic with the name of *The People of Porto Rico*, with governmental power, and power to sue and be sued as such." The existing laws and ordinances of Porto Rico, except as otherwise provided, shall continue in effect. The commissioner of navigation shall make regulations for the nationalization of all vessels owned by Porto Ricans, and for their admission to the benefits of the coasting trade of the United States. The coins of Porto Rico shall be exchanged for United States coins, at the rate of 100 cents of the former to 60 of the latter. After August 1, 1900, the latter coins shall be the sole legal tender for debt thereafter contracted. All property acquired in Porto Rico by the United States under the treaty of peace with Spain—public bridges, road houses, water power, highways, unnavigable streams, subterranean waters, harbor shores, docks, slips, reclaimed lands, etc., but not harbor areas or navigable waters—is transferred to the government of Porto Rico with power to legislate. "The statutory laws of the United States, except as otherwise provided, shall have the same force and effect in Porto Rico as in the United States." The chief executive of Porto Rico shall be a governor appointed by the President for four years, with the consent of the Senate. He shall have all the powers, that are not locally inapplicable, of a governor of a Territory of the United States. The President shall also appoint for four years, with the consent of the Senate, a secretary, an attorney-general, a treasurer, an auditor, a commissioner of the interior, a commissioner of education, and five other persons. These eleven persons, of whom at least five shall be Porto Ricans, shall constitute an executive council, which shall also be the upper legislative house of Porto Rico. The house of delegates, or lower legislative house, shall consist of 35 members, elected biennially, five from each of the seven districts of the island. "No person shall be eligible for membership in the house who is not 25 years of age, and able to read and write either the Spanish or English language, and who is not possessed of taxable property in Porto Rico." In the executive council and in the house of delegates is vested the legislative power granted to Porto Rico. Either house may initiate legislation, but the concurrence of both houses is required to pass any law. All laws, moreover, must be reported to the United States Congress, which reserves absolute power to annul the same. Grants of franchises, rights and privileges or concessions of a public or quasi-public nature shall be made by the executive council with the approval of the governor, and all franchises granted in Porto Rico shall be reported to Congress, which may modify or annul them. All citizens of Porto Rico shall be entitled to vote who have been *bona-fide* residents for one year, and who possess the qualifications now required by law and the military orders, *subject, however*, to such additional qualifications as may be prescribed by the executive council. The judicial power shall be vested in the existing courts of Porto Rico so far as these do not conflict with the provisions made in this act. The justices and marshal of the Supreme Court of Porto Rico shall be appointed by the President, with the consent of the Senate, and the judges of the district courts shall be appointed by the governor, with the consent of the executive council, and all other court officials shall be chosen as the legislative assembly may direct, which shall also have power to legislate in respect to these courts and to establish other courts. Porto Rico shall constitute a federal judicial district to be called "The District of Porto Rico." For the court of this district the President shall appoint, with the approval of the Senate, a judge, attorney, and marshal. The court, in addition to the ordinary jurisdiction of district courts of the United States, shall have jurisdiction of all cases cognizant in the circuit courts of the United States and shall proceed therein in the same manner. Writs of error and appeals from the final decisions of the Supreme Court of Porto Rico and the District Court of the United States shall be allowed, and may be taken to the Supreme Court of the United States in the same manner as from the Supreme Courts of the Territories.

The qualified voters of Porto Rico shall, on the first Monday of November, 1900, and every two years thereafter, choose a resident commissioner to the United States, who shall be entitled to official recognition by all departments of the government in Washington. No person shall be eligible to such election who is not a *bona-fide* citizen of Porto Rico, who is not 30 years of age, and who does not read and write the English language. A commission of three, at least one of whom must be a native citizen of Porto Rico, shall be appointed by the President, with the consent of the Senate, to compile and revise the laws of Porto Rico, and to frame and report such legislation as may be necessary to make a harmonious and economical government, establish justice, and secure its efficient administration, equalize taxation, and in general to secure and extend the benefits of a republican form of government to all the inhabitants of Porto Rico. This commission is required to make to Congress a full and final report of its findings on or before May 1, 1901. A reading

of the foregoing bill shows that no exact definite amount of self-government is given by Congress to Porto Rico; the amount may be large or small in any instance according as Congress and the President consider wise. The control by the federal government of the personnel of the executive council precludes the probability of any Porto Rican legislation not desired by the administration. But in case of such legislation, Congress retains the right unreservedly to quash it. Again, the power of the executive council to regulate the elective franchise gives it at need an indirect, but very great influence over the kind of bills likely to be introduced by the house of delegates. The judges of the higher courts, as well as the officials of power, are all appointed by the President or his appointees. The only absolute political right given to the Porto Ricans is that of electing a commissioner to the United States; but this commissioner holds merely an advisory position. The United States, in express terms, holds the power, through the executive council, or by act of Congress, to regulate from first to last the matter of all franchises.

Elections.—Elections were held in Porto Rico on November 6 for a delegate to the United States Congress and for thirty-five members, five from each of the seven districts of the island, to the House of Delegates or lower branch of the Porto Rican Legislature. There were at first two parties in the field, the Republican, which seemed in a general way to uphold the Washington administration, and the Federals, who endorsed the Democratic (United States) nominee for President. But some two weeks before the election the Federal leaders, after submitting the matter to a party vote, instructed their followers to withdraw from the election. They stated that irregularities had occurred in the registration, that the election districts had been wrongly divided, and that therefore they would appeal the election to the courts. On account of this pronunciamiento less than 200 votes were cast for the Federal ticket. Of those qualified to vote in the island, and estimated at 110,000, about 60,000 voted for the Republican nominees. Allowing for those who would not have voted in any case, this showed that the Republican party was in the majority. The House of Delegates elected was solidly Republican, and the Republican nominee for commissioner to Washington, Frederico Degetan, was elected by 58,367 votes to 148. In commenting upon the orderly conduct and results of the election Governor-General Allen said: "It means stable government and the protection of property interests, with which prospective investors in Porto Rico are deeply concerned. It means education, public works, and all the beneficent works which follow legislation wisely and conscientiously undertaken. It is an emphatic declaration of unqualified loyalty to the United States."

Officers.—The executive appointments of the President to Porto Rico under the Porto Rican Tariff and Civil Government act were as follows: Governor, Charles H. Allen, of Massachusetts; secretary, William H. Hunt, of Montana; attorney-general, John A. Russell, of San Juan; treasurer, J. H. Hollander, of Maryland; auditor, John R. Garrison, of the District of Columbia; commissioner of interior, William H. Elliott, of Indiana; commissioner of education, Martin G. Brumbaugh, of Pennsylvania. With the exception of the governor these executive officers constitute, together with the five following (eleven in all), the Executive Council or upper branch of the Legislature: J. C. Barbosa, R. M. Cintron, J. G. Benitez, J. G. Brioso, and A. Crosas. The judicial appointments of the President were: To the Supreme Court of Porto Rico—chief justice, J. S. Quinones; associate justices, L. Sulzbecher, R. M. Abcille, J. M. Figuerar, J. C. Hernandez; to the United States Federal District Court—W. H. Holt, justice; N. B. K. Pettingill, attorney; E. S. Wilson, marshal.

PORTUGAL, a kingdom of Europe, occupies the southwestern part of the Iberian Peninsula, and is bounded on the north and east by Spain, on the south and west by the Atlantic Ocean. The area, including the Azores and Madeira Islands, is 36,038 square miles, and the population in 1890 was 5,082,257. The chief cities are Lisbon, with a population in 1890 of 301,206, and Oporto, 138,860. The state religion is Roman Catholicism, and the number of dissidents, though all religions are tolerated, is considerably less than 1000. Though compulsory education exists, the law is not enforced, and the percentage of illiteracy is very large, the proportion in 1890 being 79 per cent. That year there were 5339 primary schools with 237,991 pupils. The University of Coimbra had 1429 students in 1899-1900. Nearly one-half the land is waste; the chief agricultural products are maize, rye, wheat, olive oil, figs, oranges, and, most important of all, wine. Sulphur, copper, lead, coal, tin, manganese, and antimony are the chief mineral products, the copper and sulphur comprising more than three-fourths the total mineral yield. The chief articles of export are wine, cork, cottons, fish, and fruit, wine forming one-half of the total exports; the principal imports are raw materials, foodstuffs, textiles, small manufactures, and animals. The value of the exports in 1898 was 31,127,990 milreis (milreis = \$1.08), and of the imports, 48,606,400 milreis. Great Britain contributed 32 per cent. of the imports, the United States, over 14 per cent., Germany, 13 per cent., France, 10 per cent., and

Spain, 9 per cent. Of the exports, 28 per cent. went to Great Britain, 20 per cent. to Brazil, 16 per cent. to the colonies, 13 per cent. to Spain. The value of the exports to the United States during 1900 was \$3,349,100, and of the imports from the United States, \$5,705,179. The merchant marine in 1899 consisted of 630 vessels of 129,522 tons. In 1898 there were 1464 miles of railway in the country, and in 1896 8079 miles of telegraph wire. Revenue is derived from direct taxation (25 per cent.), indirect taxation (50 per cent.), registration and stamps (10 per cent.), the national property and receipts *d'ordre*. The chief items of expenditure are the interest on the public debt (35 per cent.), the civil list (20 per cent.), the army (13 per cent.), the navy and colonies (8 per cent.). The budget for 1899-1900 showed an income of 52,373,581 milreis and an expenditure of 53,919,296 milreis. The estimated revenue for 1900-01 was 52,188,000 milreis, and the expenditure, 54,848,000 milreis, the deficit to be covered by an increase in the stamp duties and land tax. The army is raised partly by enlistment and partly by conscription. The peace footing in 1900 was 30,000 men, the war footing 3114 officers and 145,639 men. The navy of Portugal is small, but contains a few good vessels.

History.—The bubonic plague, which had been raging at Oporto during the second half of 1899, disappeared from Portugal by the middle of January, and in February the special measures for stamping out the disease were discontinued. The Republicans in the Chamber of Deputies fiercely attacked the policy of the government toward England, and had with them the sympathy of the intelligent classes. Nevertheless, in the elections of November the government gained a great victory. The Republicans were badly defeated, and the new chamber was composed of 90 Ministerialists, 28 of the Opposition, and 9 independents. Of far greater importance than the internal affairs were the relations of Portugal with England in connection with Portuguese East Africa and the war in the Transvaal. Great Britain had for a long time desired to obtain the Portuguese territory in order to round out her possessions in South Africa. As early as 1891 Portugal, by treaty, gave England an option on Delagoa Bay and the port of Lourenço Marques, and agreed to permit the passage across her territory of English troops bound for the British possessions north of the Limpopo River, now known as Rhodesia. On December 27, 1900, the *Lokal Anzeiger* of Berlin published several articles of a secret treaty arranged between Great Britain and Germany in 1898, by the terms of which the two Powers were to share the Portuguese territory in South Africa whenever Portugal should decide to sell, Germany taking Mozambique and Great Britain Lourenço Marques. Early in January a semi-official reply to this appeared in the Lisbon press, in which Portugal disclaimed all desire to dispose of her African possessions. But England eagerly desired Lourenço Marques as it served as a port of entry for men, ammunition, and supplies bound for the Transvaal. It loudly accused the Portuguese of a breach of neutrality in allowing reinforcements for the Boers to pass through the country, established a blockade of the port of Lourenço Marques, and exercised its ancient right of search. Though this forced Portugal to act with greater vigilance in the matter of contraband of war, Great Britain was not satisfied. Its real desire was to land men at Lourenço Marques and send them across the narrow strip of Portuguese territory into the Transvaal, but as long as Portugal remained neutral such a course was impossible. For three months, however, tremendous pressure was brought to bear on the Portuguese government until finally, on April 4, the foreign minister announced in the Cortes, that permission had been granted Great Britain to land troops at Beira, a port in Mozambique, 450 miles north of Lourenço Marques, and to use the Portuguese railroad for the transportation of the soldiers to Rhodesia. The European Powers, Russia and Germany especially, received the news with tremendous indignation. Portugal's stand was denounced as cowardly, while England was accused of acting the part of a bully, the agreement itself being styled a flagrant breach of neutrality. But Portugal and Great Britain defended themselves by pointing to the treaty of 1891 as authority for such an act. The British troops were not bound for the Transvaal, it was said, but for British territory, and ostensibly their object was the pacification of Rhodesia, which was threatened by the natives, and the guarding of the border against a possible northward movement of the Boers. As further events showed, the importance of the contingent thus sent across Portuguese territory was not great, but for a time the incident threatened to bring about grave international relations.

PORTUGUESE GUINEA, a small possession of Portugal on the western coast of Africa, being bounded on the land side by French Guinea and Senegal (French). The estimated area is 4440 square miles, and the estimated population, 820,000. Portuguese Guinea includes the adjacent archipelago of Bissagos, with the island of Bolama, on which the capital town, Bolama, is situated. The chief port is Bissao. For the fiscal year 1900 the estimated revenue was 56,655 milreis, and the estimated expenditure, 216,742 milreis. (The value of the milreis is \$1.08.) The principal products are rubber, wax, oil seeds.

POTATOES. The following table, published by the Department of Agriculture, division of statistics, shows the acreage, production, and value of potatoes in the United States in 1900:

STATES AND TERRITORIES.	POTATOES.				
	Acreage.	Yield per acre.	Production.	Value per bushel.	Total value.
		<i>Bushels.</i>	<i>Bushels.</i>	<i>Cents.</i>	<i>Dollars.</i>
Maine.....	49,308	126	6,200,208	49	3,038,102
New Hampshire.....	17,916	101	1,809,516	53	959,043
Vermont.....	24,686	134	3,305,244	40	1,322,098
Massachusetts.....	28,626	79	2,261,454	66	1,492,560
Rhode Island.....	7,428	94	698,232	70	488,762
Connecticut.....	25,818	96	2,478,528	70	1,734,970
New York.....	239,276	81	27,481,356	45	12,366,610
New Jersey.....	48,435	69	3,342,015	60	2,005,209
Pennsylvania.....	188,206	58	10,921,748	53	5,788,526
Delaware.....	5,244	48	256,512	60	153,907
Maryland.....	23,081	55	1,269,455	54	685,506
Virginia.....	38,241	58	2,223,778	59	1,312,029
North Carolina.....	17,434	61	1,063,474	65	691,258
South Carolina.....	4,307	78	335,946	100	335,946
Georgia.....	5,762	68	391,816	77	301,698
Florida.....	1,738	60	104,280	106	110,537
Alabama.....	6,037	69	417,933	82	342,705
Mississippi.....	5,259	66	347,094	83	288,088
Louisiana.....	7,709	70	539,630	79	426,308
Texas.....	14,789	63	916,918	87	806,888
Arkansas.....	29,553	72	2,127,816	57	1,212,855
Tennessee.....	25,290	54	1,365,660	58	792,083
West Virginia.....	37,664	80	3,029,120	51	1,544,851
Kentucky.....	40,107	70	2,807,490	50	1,403,745
Ohio.....	165,224	76	12,561,584	40	5,024,634
Michigan.....	171,453	97	16,630,941	26	4,321,045
Indiana.....	109,168	83	9,060,529	38	3,443,001
Illinois.....	166,262	92	15,296,104	41	6,271,403
Wisconsin.....	151,647	108	16,619,641	28	4,373,499
Minnesota.....	106,613	81	8,636,058	30	2,590,817
Iowa.....	194,608	72	14,004,576	37	5,181,693
Missouri.....	108,677	98	10,106,961	35	3,537,436
Kansas.....	100,642	72	7,246,224	48	3,478,186
Nebraska.....	146,431	66	9,664,446	49	4,735,579
South Dakota.....	55,217	73	4,080,841	36	1,451,103
North Dakota.....	29,555	63	1,836,860	49	753,061
Montana.....	4,781	134	640,654	53	339,547
Wyoming.....	3,921	99	388,170	68	263,962
Colorado.....	33,273	56	1,863,288	52	1,527,896
New Mexico.....	976	19	18,544	114	21,140
Arizona.....	.....	.....	.....	.....	.....
Utah.....	5,500	118	649,000	48	311,520
Nevada.....	1,753	156	273,468	56	153,142
Idaho.....	5,080	196	664,080	47	321,518
Washington.....	15,359	116	1,859,644	47	864,633
Oregon.....	15,382	110	1,692,020	45	761,409
California.....	26,806	104	2,788,032	53	1,477,057
United States.....	2,611,054	80.8	210,926,897	43.1	90,811,167

FRESBYTERIAN CHURCH IN ENGLAND, a united church since 1876, includes 318 congregations and 15 preaching stations, providing for 164,491 persons. It has, including professors, 334 ministers and is represented in mission fields by 19 ordained and 12 medical missionaries, besides 3 missionary teachers and 28 women missionaries. Westminster College, Cambridge, transferred from London in 1899, is controlled by the Presbyterians. Moderator of the General Synod for 1900-01, Rev. John Watson, D.D., Liverpool.

PRESBYTERIAN CHURCH IN THE UNITED STATES OF AMERICA (NORTH). The oldest churches in this body trace their origin to the seventeenth century. Organization was effected by the founding of the first presbytery in 1706, the formation of the General Synod of Philadelphia in 1717, and the establishment of the General Assembly, with four synods, in 1788. At the meeting in 1900, the 112th General Assembly passed resolutions memorializing Congress to enact measures against polygamy, and announcing its opposition to the sale and use of intoxicants at army canteens. The necessity of an increased number of ministers was recognized by the assembly in a resolution directing all pastors to present the claims of the ministry to their educated young men. A committee of fifteen, composed of 8 ministers and 7 elders, was appointed by the moderator to consider the matter of restatement of the Confession of Faith. The Board of

Missions for Freedmen reported the entire removal of a debt that for the last eight years had been impeding its work. Throughout the year interest has continued in the matter of creed revision and the reports of the committee's several meetings have been widely read. On December 8, the committee authorized a statement to the effect that returns from local presbyteries plainly indicate that the church desires some change in its creed, and the committee, in unanimous agreement, recommends to the General Assembly that some revision be made. The case of Dr. Arthur C. McGiffert, of the Union Theological Seminary, has also created much comment. Charges of heresy were brought, which the New York Presbytery refused to entertain; Dr. McGiffert, however, afterward resigned membership in the church.

The executive work of the church is now administered by eight boards, which received in contributions for the year 1900, \$2,825,755. The Presbyterian body continues to increase in numbers, and now has 7467 ministers, 7750 churches and 1,007,689 communicants; its contributions for the year 1900 amounted to \$15,054,301. Under the control of the denomination are 13 theological seminaries, while its colleges number 38, some of which are not in organic relation to the church, but are controlled by boards, a majority of whose members are Presbyterians. The next General Assembly will convene at Philadelphia in May, 1901. Officers of the General Assembly: Moderator, Rev. Charles A. Dickey, D.D.; Stated clerk, Rev. William H. Roberts, D.D., LL.D., 1319 Walnut Street, Philadelphia.

PRESBYTERIAN CHURCH IN THE UNITED STATES (SOUTH), originated 1864, in the union of two bodies which had previously withdrawn from the Presbyterian Church because of the slavery agitation. Distinct organizations are still maintained by the two great branches, though fraternity was established in 1882. The Southern church claims to be more conservative in doctrine, adhering strictly to the Westminster Confession. Society reports rendered to the General Assembly, which met May 17, 1900, at Atlanta, Ga., indicate a year of progress. Contributions amounted to \$2,032,936, of which \$141,507 was devoted to foreign missions, \$149,674 to home missions, and \$90,612 to education. The work of colored evangelization, which received \$11,322, is still on a small basis, but presents some encouragement, inasmuch as an increasing number of white churches are opening their Sunday schools for instruction of the negroes. The church shows a growth in membership of 2 per cent. over the preceding year and of over 25 per cent. for the last decade, it now has 79 presbyteries, 1461 ministers, 2959 churches, and 225,800 members. Officers of the General Assembly: Moderator, Hon. J. W. Martin; Stated Clerk, Rev. W. A. Alexander, D.D., 501 College St., Clarksville, Tenn.

PRESIDENTIAL CAMPAIGN. The present article gives a general survey of the conventions, issues and results of the presidential campaign of 1900, comprising the following sections: I. Democratic and Republican National Conventions; II. Democratic and Republican Platforms; III. Other Conventions and Platforms; IV. The Issue of Imperialism; V. The Currency Issue; VI. The Trust Issue; VII. Progress of the Campaign; VIII. The Results of the Election. Of the issues of the campaign more attention has been given to that of imperialism, so called, than to any other, because it is the only issue which was distinctively a new one in the campaign of 1900, and also because its many phases represent, when taken together, the most important events in the history of this country during the two years preceding.

DEMOCRATIC AND REPUBLICAN NATIONAL CONVENTIONS.

The Republican and Democratic conventions for the nomination of candidates for the Presidency and Vice-Presidency of the United States were remarkable for the similarity in their proceedings. Both conventions unanimously re-nominated their presidential candidates of 1896; both reaffirmed, with various shiftings of emphasis, the platforms of the previous campaign; and both renewed their ancient complaints against the other. In both, also, the most critical matter still unsettled when the conventions met, was finally decided by the result in the convention of interparty differences of New York State. Governor Roosevelt, it seems certain, would not have been nominated by the Republicans to the Vice-Presidency, in view of his declaration on February 12, that "under no conditions could he or would he accept the nomination," if Senator Platt had not worked covertly to that end and enlisted ex-Senator Quay in the same cause. The enmity between Mr. Croker and ex-Senator Hill resulted in the Democratic convention, by a vote of 40 to 26 of the New York delegates, in the exclusion of Mr. Hill from the national committee on resolutions, and the election of ex-Justice Van Wyck to that place. With the exception of Mr. Bryan, Mr. Hill was the most popular

Democrat at the convention, and if he had been placed upon the resolutions committee, it was generally conceded that his great prestige would have enabled him to essentially modify or altogether strike out the clause in favor of free silver, which was finally adopted in committee by a majority of two, after Mr. Bryan had insisted by telegram upon that plank, as a condition of his being the candidate of the convention. Thus, in both conventions, the dramatic quality as well as the largest practical, because previously undetermined, issue came from the intrusion of the sectional interest of New York State politics into national politics.

Republican Convention.—The Republican National Convention was held at Philadelphia, Penn., June 19, 20 and 21. It had been for many months a foregone conclusion that President McKinley would be renominated by his party; and as the course of public events and the policies to which the Republican party was committed by legislation already enacted, had predetermined the essentials of the platform for the ensuing campaign, the convention partook of the nature of a general ratification meeting. The ennui usually attending such meetings was displaced, however, by the very real interest felt in the choice of a vice-presidential candidate. Elihu Root, secretary of war; John D. Long, secretary of the navy; the Hon. J. P. Dolliver, of Iowa, and other prominent men had been mentioned for this position. But Mr. Root positively declined the candidature, and Western and Central delegates felt that no one would be so thoroughly popular in all sections of the country as Governor Roosevelt. So a stampede was started for him, and though the governor requested that the delegates respect his wishes and judgment in the matter, he was made the unanimous candidate of the convention for Vice-President. That Senator Platt directly or indirectly brought this about, no one seemed to doubt. It had been repeatedly stated, that the governor's advocacy of extensive canal improvements had alienated certain of the farming interests in New York, and his signing of the Ford franchise-tax bill had aroused the wrath of various corporations, who were prepared to give practical effect to their hostility by diminished campaign contributions if Governor Roosevelt was renominated. In short, the party managers felt that the times were propitious for dropping the governor out of New York politics with advantage to themselves and glory to the State. The delegates on the other hand saw in Governor Roosevelt an effective public speaker, whose downright honesty and widely varied sympathies would make him an unrivalled vote-getter with all classes. So he was nominated. Outside of this nomination, the time of the convention was largely given to an emphatic endorsement of President McKinley's administration and an expression of the satisfaction with which the leaders regarded the present condition of their party. The contrast presented by the business interests of the country in 1896 and in 1900 was generally used to point the moral of Democratic incompetence. "No summary of the unmerciful disasters of those four years (under Democratic rule)," said Senator Wolcott, "can convey an idea of a tithe of the ruin they wrought;" but "to-day there isn't an idle mill in the country." The good effects of the currency bill and the Dingley tariff were noted, and much attention was given to the success of American arms in the Spanish War: "We waged," said Governor Roosevelt, "the most righteous and brilliantly successful foreign war that any country has waged during the lifetime of the present generation." The platform drawn by the committee on resolutions, of which Senator Fairbanks was chairman was unanimously adopted. No attempt at brilliant rhetoric or catch-phrasing was made, and the platform was largely devoted to a review of the history of the four preceding years. The statements as to future policies were somewhat reserved, presumably because the future position of the administration had already been indicated by the present policy and because it was felt that in the probable event of the continuance of the party in power, the country would demand a pretty literal fulfilment of any and all promises made. In this respect the platform differed markedly from the Democratic platform adopted at Kansas City on July 5. As will be seen from a succeeding paragraph on Platforms, the legislation advocated by the Democrats was much greater in amount as well as more definite in kind. The Republican platform favored in general the continuance of the existing domestic and foreign policy, while the Democratic platform advocated a reversal of this policy in most important matters.

Democratic Convention.—The National Democratic Convention was held at Kansas City, Missouri, on July 4, 5 and 6. The prediction that the convention would advocate the free coinage of silver as heartily as it had done in 1896, proved an error. While the personal popularity of Mr. Bryan seemed to have suffered no diminishment, a strong feeling had developed among delegates representing through their constituents a majority in the Electoral College, that it would be expedient to drop the 16 to 1 issue. Mr. Bryan, however, much to the joy of the Republicans, refused to allow this issue to be either dropped or slurred over. The principle of the dollar, he said, was the great one to be fought for in the coming

campaign, and "if every one deserts me I shall fight for it alone." In the committee on resolutions, where the platform was drafted, the silver question was debated for twelve hours, before it was decided, by a narrow majority of 2, to recommend the free and unlimited coinage of silver without the co-operation of any other nation. But this decision, since the committee was composed of one member from each State and Territory, represented, as it happened, the opinion of only 342 votes in the convention in favor of free silver, as against 582 votes opposed to silver, and in the electoral college of 156 votes for and 288 against silver; thus giving a clean majority against silver of 228 in the convention and 129 in the electoral college. Yet no minority report was submitted by the committee, and the platform reported to the convention advocating free silver was unanimously adopted. For this there were several main reasons. 1. In the first place it was clearly understood that Mr. Bryan would under no conditions accept a platform from which free silver was omitted. 2. The platform committee had declared "imperialism" to be the "paramount issue" of the campaign, and both by the vigor and the quantity of the language devoted in the platform to this subject and to that of trusts, the currency question had been relegated so far as possible to the far background. 3. An entire omission of silver in the platform would have alienated the support both of the Populists and of the Silver Republicans, and might have disrupted the convention. 4. Ex-Senator Hill, of New York, had been excluded by Mr. Croker from the platform committee. Mr. Hill was, perhaps, more than any other man, spokesman for the great commercial States, which were also felt to be the doubtful States of the coming election. It was known that Mr. Hill would have endeavored to quash free silver in the platform, and failing in that would have submitted a minority report to the convention—thus bringing free silver to the direct vote of the delegates. But this was prevented, as already stated, by his exclusion from the committee on resolutions. On July 5, Mr. Bryan was, by unanimous vote, made the Democratic candidate for President. For the vice-presidency the choice of the convention was between Adlai E. Stevenson, Vice-President of the United States from 1884 to 1888, Charles A. Towne, vice-presidential candidate of the Populist Party, and ex-Senator Hill. Mr. Hill, however, absolutely refused the nomination; partly, no doubt, on account of the platform adopted, and partly because he suspected that if he were nominated, Mr. Croker would endeavor to put him into political oblivion by bringing about the defeat of the national ticket in New York State. In reference to Mr. Towne, the convention took the position that enough had been done for free silver in the platform, and that an effort should be made, by the nomination of a conservative vice-presidential candidate, to placate and win the support of the Gold Democrats. When, therefore, Mr. Bryan did not advocate the nomination of Mr. Towne, as the Populists and Silver Republicans had been sure that he would do, the convention nominated Mr. Stevenson for the vice-presidency and adjourned. The Silver Republicans, at Mr. Towne's urgent request (see paragraph Silver-Republican Convention), and the Populist Party upon his resignation on August 7 (see paragraph Progress of the Campaign), consented to accept Mr. Stevenson in Mr. Towne's place. The main planks of the Democratic platform will be found in the following paragraph on Platforms, where they are contrasted with the corresponding planks of the Republican platform. In general the Democrats sharply arraigned the Republicans for imperialism, militarism and commercialism, and promised that, if the Democrats were put in power, these things should quickly cease. The platform stated, that, upon the basis of the Declaration of Independence, which asserts that only that government is just which governs through and by means of the consent of the governed, the Republican policy in the Philippines and in Porto Rico was subversive of democratic institutions. Similarly, the militarism which this policy necessitated was an innovation, dangerous, expensive, and monarchical. While the main premise of the Republican platform was the inability of the Democratic party to conduct affairs, that of the Democratic platform was the menace to free institutions which a further continuance of the Republican party in power would constitute.

DEMOCRATIC AND REPUBLICAN PLATFORMS.

The main planks of the Democratic and Republican national platforms are set forth opposite each other in the following columns in order to bring out distinctly the points of difference:

DEMOCRATIC.

"We hold, with the United States Supreme Court, that the Declaration of Independence is the spirit of our gov-

REPUBLICAN.

"When the people (in 1896) assembled at the polls, after a term of Democratic legislation and administra-



(Photo by Rockwood)

PRESIDENT WILLIAM MCKINLEY.



(Photo by Pach.)

VICE-PRESIDENT THEODORE ROOSEVELT.

ernment, of which the Constitution is the form and letter. We declare again that all governments instituted among men derive their just powers from the consent of the governed; that any government not based upon the consent of the governed is a tyranny, and that to impose upon any people a government of force is to substitute the methods of imperialism for those of a republic. . . . We assert that no nation can long endure half republic and half empire, and we warn the American people that imperialism abroad will lead quickly and inevitably to despotism at home. . . . We denounce the Porto Rico law enacted by a Republican Congress . . . as a bold and open violation of the nation's organic law. . . . We condemn and denounce the Philippine policy of the present administration. It has . . . placed the United States . . . in the false and un-American position of crushing with military force the efforts of our former allies to achieve liberty and self-government. . . . We oppose militarism. It means conquest abroad and intimidation and oppression at home. . . . For the first time in our history and coeval with the Philippine conquest has there been a wholesale departure from our time-honored and approved system of volunteer organizations. We denounce it as un-American, un-democratic and un-republican and as a subversion of the ancient and fixed principles of a free people."

Principal Planks of Party Platforms.—

DEMOCRATIC PLATFORM.

1. "We reaffirm and endorse the principles of the National Democratic platform adopted at Chicago in 1896, and we reiterate the demand of that platform for an American financial system, made by the American people for themselves, which shall restore and maintain a bimetallic price level, and as part of such system the immediate restoration of the free and unlimited coinage of silver and gold at the present legal ratio of sixteen to one, without waiting for the aid or consent of any other nation."

2. "We pledge the Democratic party to an increasing warfare, in nation, State and city, against private monopoly in every form. Existing laws against trusts must be enforced, and more stringent ones must be enacted, providing for publicity . . . and requiring all corporations (engaged in interstate commerce) to show that they have no water in their stock, and that they have not attempted, and are not attempting, to monopolize any branch of business or the production of any ar-

tion, business was dead, industry paralyzed, and the national credit disastrously impaired. . . . The Democrats had no other plan with which to improve the ruinous conditions which they had themselves produced than to coin silver at the ratio of 16 to 1. The Republican party, denouncing this plan . . . promised to restore prosperity by means of two legislative measures—a protective tariff and a law making gold the standard of value. . . . Prosperity more general and more abundant than we have ever known has followed these enactments. There is no longer controversy as to the value of any government obligations. Capital is fully employed and labor everywhere is profitably employed. Our signal triumph in the Spanish War—unsought and patiently resisted—bore equal tribute to the courage of American soldiers and sailors, and to the skill and foresight of Republican statesmanship. . . . In asking the American people to endorse this Republican record . . . we remind them of the fact that the menace to their prosperity has always resided in Democratic principles, and no less in the general incapacity of the Democratic party to conduct public affairs. . . . The election of a Democratic President could not fail to impair the country's credit, and to bring once more into question the intention of the American people to maintain upon the gold standard the parity of their money circulation."

REPUBLICAN PLATFORM.

1. "We renew our allegiance to the principle of the gold standard, and declare our confidence in the wisdom of the legislation of the 56th Congress, by which the parity of all our money and the stability of our currency upon a gold basis has been secured. . . . We declare our steadfast opposition to the free and unlimited coinage of silver. No measure to that end could be considered which was without the support of the leading commercial countries of the world."

2. "We recognize the necessity and propriety of the honest co-operation of capital to meet new conditions . . . but we condemn all conspiracies and combinations intended to restrict business, to create monopolies, to limit production, or to control prices, and favor such legislation as will effectively restrain and prevent all such abuses, and secure the rights of producers, laborers, and all who are engaged in industry and commerce."

ticles of merchandise, and the whole constitutional power of Congress over interstate commerce, the mails, and all modes of interstate communication shall be exercised by the enactment of comprehensive laws upon the subject of trusts."

3. "The Filipinos cannot be citizens without endangering our civilization; they cannot be subjects without imperilling our form of government. . . . We favor an immediate declaration of the nation's purpose to give to the Filipinos: First, a stable form of government; second, independence; and, third, protection from outside interference. . . . We are unalterably opposed to the seizing or purchasing of distant islands to be governed outside the Constitution and whose people can never become citizens. . . . The burning question of imperialism growing out of the Spanish War involves the very existence of the republic and the destruction of our free institutions. We regard it as the paramount issue of the campaign."

4. "Tariff laws should be amended by putting the products of trusts upon the free list to prevent monopoly under the plea of protection. . . . We condemn the Dingley tariff law as a trust-breeding measure, skilfully devised to give the few favors which they do not deserve, and to place upon the many burdens which they should not bear."

5. "We oppose the accumulation of a surplus to be squandered in such barefaced frauds upon the taxpayers as the Shipping Subsidy bill, which, under the false pretence of prospering American ship-building, would put unearned millions into the pockets of favorite contributors to the Republican campaign fund."

6. "We favor the immediate construction, ownership, and control of the *Nicaragua Canal* by the United States."

7. "In the interest of American labor . . . we recommend that Congress create a department of labor, in charge of a secretary with a seat in the cabinet."

8. "We favor the reduction and speedy repeal of the war taxes, and a return to the time-honored Democratic policy of strict economy in governmental expenditures."

9. "We promise the people of those Territories (Arizona, New Mexico, and Oklahoma) immediate statehood . . . and we favor home rule and a territorial form of government for Alaska and Porto Rico."

10. "We demand the prompt and honest fulfilment of our pledge to the Cuban people and the world that the

3. "No other course was possible than to destroy Spain's sovereignty throughout the western Indies and in the Philippine Islands. That course created our responsibility . . . to provide for the maintenance of law and order, and for the establishment of good government, and for the performance of international obligations. Our authority could not be less than our responsibility . . . and it became the high duty of the government to maintain its authority, to put down armed insurrection, and to confer the blessings of liberty and civilization upon all the rescued peoples. The largest measure of self-government consistent with their welfare and our duties shall be secured to them by law."

4. "We renew our faith in the policy of protection to American labor. In that policy our industries have been established, diversified, and maintained. . . . We favor the associated policy of reciprocity, so directed as to open our markets on favorable terms for what we do not ourselves produce, in return for free foreign markets."

5. "Our present dependence upon foreign shipping . . . is a great loss to the industry of this country. It is also a serious danger to our trade. . . . The national defence and naval efficiency of this country, moreover, supply a compelling reason for legislation which will enable us to recover our former place among the trade-carrying fleets of the world."

6. "We favor the construction, ownership, control and protection of an *Isthmian canal* by the government of the United States."

7. "In the interest of our expanding commerce we recommend that Congress create a department of commerce and industries, in the charge of a secretary, with a seat in the cabinet."

8. "The country is now justified in expecting, and it will be the policy of the Republican party to bring about, a reduction of the war taxes."

9. "We favor home rule for and the early admission to statehood of the Territories of New Mexico, Arizona, and Oklahoma."

10. To Cuba independence and self-government were assured in the same voice by which war was declared, and

United States has no disposition nor intention to exercise sovereignty, jurisdiction or control over the island of Cuba, except for its pacification."

OTHER CONVENTIONS AND PLATFORMS.

Social Democratic Convention.—On March 9 the Social Democratic party, at their National convention held at Indianapolis, nominated Eugene V. Debs, of Indiana, for President, and Job Harriman, of California, for Vice-President. In the platform adopted, the object of the party was declared to be: (1) "The organization of the working class into a political party to conquer the public powers now controlled by capitalists," and (2) "the abolition of wage slavery, by the establishment of a national system of co-operative industry, based upon the social or common ownership of the means of production and distribution, to be administered by society in the common interest of all its members, and the complete emancipation of the socially useful classes from the domination of capitalism." For the fulfillment of these ends the following recommendations were made:

"1. Revision of our federal Constitution in order to remove the obstacles to complete control of government by the people irrespective of sex.

"2. The public ownership of all industries controlled by monopolies, trusts, and combines.

"3. The public ownership of all railroads, telegraphs and telephones; all means of transportation, and communication; all waterworks, gas, and electric plants, and other public utilities.

"4. The public ownership of all gold, silver, copper, lead, iron, coal, and other mines, and all oil and gas wells.

"5. The reduction of the hours of labor in proportion to the increasing facilities of production.

"6. The inauguration of a system of public works and improvements for the employment of the unemployed, the public credit to be utilized for that purpose.

"7. Useful inventions to be free, the inventor to be remunerated by the public.

"8. Labor legislation to be national, instead of local, and international when possible.

"9. National insurance of working people against accidents, lack of employment, and want in old age.

"10. Equal civil and political rights for men and women, and the abolition of all laws discriminating against women.

"11. The adoption of the initiative and referendum, proportional representation, and the right of recall of representatives by the voters.

"12. Abolition of war and the introduction of international arbitration."

Anti-Fusion Populist Convention.—The national convention of the Anti-Fusion, or Middle-of-the-Road Populists, was held at Cincinnati, Ohio, on May 9 and 10. Wharton Barker, of Philadelphia, Penn., was nominated for President, and Ignatius Donnelly, of Hastings, Minn., for Vice-President. The platform adopted was in part as follows: "We demand the initiative and referendum and the imperative mandate for such changes of existing fundamental and statute law as will enable the people, in their sovereign capacity, to propose and compel the enactment of such laws as they desire; to reject such as they deem injurious to their interests, and to recall unfaithful public servants." "We demand the public ownership and operation of those means of communication and transportation which the people may elect." "The land, including all natural sources of wealth, is a heritage of the people, and should not be monopolized for speculative purposes, and alien ownership of land should be prohibited." "A scientific and absolute paper money—not redeemable in any specific commodity—issued by the government only, without the intervention of banks, and in sufficient quantity to meet the demands of commerce, is the best currency that can be devised, but until such financial system is secured, we favor the free and unlimited coinage of both silver and gold at the legal ratio of 16 to 1." "We demand the levy and collection of a graduated tax on incomes and inheritances." "We demand the election of President, Vice-President, federal judges, and United senators by direct vote of the people." "We are opposed to trusts, and declare the contention between the old parties on the monopoly question is a sham battle, and that no solution of this mighty problem is possible without the adoption of the principles of public ownership of public utilities."

Populist Convention.—The Peoples, or Populist, National Convention convened at Sioux Falls, S. D., on May 9. Mr. William J. Bryan, of Nebraska, was unanimously nominated for President, and Mr. Charles A. Towne, of Minne-

sota, for Vice-President. One of the important questions presented to the convention was whether it should nominate a candidate of its own for the Vice-Presidency, or whether it should draw up a list of names, one of whom should be chosen after conference with the Democrats and Silver Republicans, when their conventions met at Kansas City, as the joint vice-presidential candidate of the three organizations. Apprehension lest too much deference to the action of other conventions might threaten the integrity of the Populist party led to the defeat of the conference proposal, and Mr. Towne was then nominated (see paragraph Progress of the Campaign.) The main planks of the platform adopted by the convention, are as follows: The Currency bill of 1900 is denounced, because it makes all money obligations payable in gold, provides for a perpetual debt, doubles the capital of bankers "by returning to them the face value of their bonds in current money notes, so that they may draw one interest from the government and another from the people," authorizes the secretary of the treasury to issue on occasion new bonds to an unlimited amount, strikes down the greenback, and "opens the printing mints of the treasury to the free coinage of bank paper money, to enrich the few and impoverish the many." The party pledges itself to endeavor to restore the greenback, redeem the United States bonds, retire all corporation money, and reopen the government mints to the free and unlimited coinage of gold and silver at the legal ratio of 16 to 1. The action of the administration in the Philippines is condemned as being in conflict with all precedents of American national life, and with the Declaration of Independence, the Constitution, and the plain precepts of humanity. A stoppage of the war is demanded by the assurance of independence to the Filipinos and the establishment of a stable government of their own creation. Public ownership and control of trusts is recommended, and also the abolishment of tariffs on goods sold by trusts; and to accomplish these purposes direct legislation is demanded by means of the initiative and referendum. Other planks of the platform are those advocating an income tax, government ownership of railroads, municipal ownership of public utilities, and the popular election of United States senators. Sympathy is extended to the Boers, injunctions by the courts in labor disputes are condemned, and the Republican administration is denounced for "its sinister efforts to substitute a standing army for the citizen soldiery, which is the best safeguard of the republic."

Prohibition Convention.—The national convention of the Prohibition party convened at Chicago on June 27. The delegates, numbering 693 and representing 37 States, nominated John G. Wooley, of Illinois, for President, and H. B. Metcalf, of Rhode Island, for Vice-President. The platform adopted stated that "there is no principle advocated by any other party which could be manifested in government with such beneficent moral and material results as the principle of prohibition applied to the beverage liquor traffic." Both the Democratic and Republican parties were declared to be insincere in their assumed opposition to monopolies, inasmuch as they did not dare to attack "the most dangerous of them all, the liquor power." The platform declared of President McKinley that "as a wine drinker at public banquets and as a wine-serving host at the White House he has done more to encourage the liquor business, to demoralize the temperance habits of young men, and to bring Christian practices and requirements into disrepute than any other President this republic has had." The President was further arraigned for "the army canteen, with all its dire brood of disease, immorality, sin, and death in this country, in Cuba, in Porto Rico, and the Philippines," and for his "apparent contempt for the vast number of petitions and petitioners protesting against it." The platform averred that the President, by executive order, could have at any time closed every army saloon if he had been so inclined. The construction put by the administration upon the Army Liquor law of 1899 forbidding the sale of liquors in any post, exchange, or canteen was condemned as being a "refusal to enforce that law" and a "treasonable nullification" of it. An amendment to the platform was passed advocating that the right of the ballot should not be denied to any citizen on account of sex.

Silver Republican Convention.—The national convention of the Lincoln, or Silver, Republican party was held at Kansas City, Mo., on July 4, 1900. This party, which was created in 1896 by the declaration of the National Republican Convention for gold coinage, adopted a platform which advocated bimetalism as "the right basis of a monetary system under the national Constitution;" denounced the Porto Rico Tariff law and "monarchy and the whole theory of imperial control;" condemned "combinations, trusts, and corporations contrived for the purpose of controlling the prices and quantity of articles supplied to the public;" favored a graduated income tax, the repeal of the war tax, popular election of United States senators, and a more extended civil service. Mr. Bryan, the Democratic nominee, was made the unanimous candidate of the convention for the presidency. For Vice-President the convention was unanimously in favor of Mr. Charles A. Towne, the Populist candi-

date for the vice-presidency; and a committee was appointed by the convention to confer with committees of the Populists and Democrats, to the end that Mr. Towne might be nominated by both the Democratic and Silver Republican conventions. But to the great disappointment of the Silver Republicans the Democrats nominated Mr. Stevenson to the vice-presidency. The Silver Republicans then determined that they would, nevertheless, nominate Mr. Towne, and the matter was about to be voted upon when Mr. Towne, in an earnest and disinterested address, reminded the delegates that "there was a national issue in the coming election which towered above the interests of men." The almost identical principles, he said, in the Democratic and Silver Republican platforms constituted a compelling cause for the Silver Republicans to accept the Democratic candidates, for in no other way could their votes assume their full value. The convention then agreed to refer the vice-presidential matter to their national committee with power to act. On July 7 this committee issued an address, accepting Mr. Stevenson as the Silver Republican vice-presidential candidate.

Minor Conventions.—The national convention of the Socialist Labor party was held in New York City, June 2 to 8. The convention on June 6 nominated for President, Joseph F. Maloney, of Massachusetts, and for Vice-President, Valentine Rimmel, of Pennsylvania. The main plank of their platform was in part as follows: "We, therefore, call upon the wage workers of the United States, and upon all other honest citizens, to organize under the banner of the Socialist Labor Party; . . . so that . . . we may put an end to that barbarous struggle (of competitive industry) by the abolition of classes, the restoration of the land and of all means of production, transportation, and distribution to the people as a collective body, and the substitution of the co-operative commonwealth for the present state of planless production, industrial war, and social disorder; a commonwealth in which every worker shall have the free exercise and full benefit of his faculties, multiplied by all the modern factors of civilization." The United Christian party nominated the Rev. S. C. Swallow, of Pennsylvania, for President, and the Rev. Charles M. Sheldon, of Kansas, for Vice-President. On September 5, the National party, which had failed to come to an understanding with the Gold Democrats or the Anti-Imperialists, nominated Senator Donaldson Caffery, of Louisiana, for President, and A. M. Howe, of Massachusetts, for Vice-President. The platform adopted advocated the maintenance of the gold standard, urged a more extended civil service reform, condemned "the granting of corrupting special privileges, whether under the guise of subsidies, bounties, undeserved pensions, or trust-breeding tariffs." The policy of the Republican party in the Philippines was also denounced. On September 5, the chairman of the executive committee of the Union Reform party announced that in accordance with the results of the referendum vote of that party, Seth H. Ellis, of Ohio, had been nominated for President, and S. T. Nicholson, of Pennsylvania, for Vice-President.

Liberty Congress of the Anti-Imperialists.—A convention of representative Anti-Imperialists, presided over by ex-Governor George A. Boutwell, of Massachusetts, was held at Indianapolis, on August 15. The convention issued an address to the voters of the United States, which was, in part, as follows: "For the first time in our country's history the President has undertaken to subjugate a foreign people and to rule them by despotic power. He has thrown the protection of the American flag over slavery and polygamy in the Sulu Islands. He has arrogated to himself the power to impose upon the inhabitants of the Philippine Islands a government without their consent and taxation without representation. He is waging war upon them for asserting the very principles for the maintenance of which our forefathers pledged their lives, their fortunes, and their sacred honor. He claims for himself and Congress authority to govern the Territories of the United States without constitutional restraint. . . . The policy of the President offers the inhabitants of Porto Rico, Hawaii, and the Philippines no hope of independence, no prospect of American citizenship, no constitutional protection, no representation in the Congress which taxes them. This is the government of men by arbitrary power without their consent; this is imperialism." We, therefore, "make the following recommendations to our countrymen: First, that without regard to their views on minor questions of domestic policy they withhold their votes from Mr. McKinley, in order to stamp with their disapproval what he has done. Second, that they vote for those candidates for Congress in their respective districts who will oppose the policy of imperialism. Third, while we welcome any other method of opposing the re-election of Mr. McKinley, we advise direct support of Mr. Bryan as the most effective means of crushing imperialism. We are convinced of Mr. Bryan's sincerity and of his earnest purpose to secure to the Filipinos their independence. His position and the declarations contained in the platform of his party on the vital issue of the campaign meet our unqualified approval."

THE ISSUE OF IMPERIALISM.

The General Position of the Two Parties.—Imperialism, if not, as the Democrats asserted it to be, the predominant issue of the campaign, was, at least, the most discussed, for the questions involved were comparatively new to American politics, of much popular interest, and offered considerable opportunities for interparty cleavage. The Democrats felt about imperialism as the Republicans did upon the currency, that this issue alone considered, the country would vote them into power. The arraignment of the Republican colonial policy by Senator Hoar and other Republicans, and the continued protest against it by, perhaps, the ablest portion of the independent press, had, it was thought, created in the Republican party a formidable minority, opposed to imperialism. A number of Democrats and Independents who had voted against Mr. Bryan in 1896 had announced their intention of opposing Mr. McKinley on account of the Philippine policy of the administration; for the same reason the Anti-Imperialists, presided over by ex-Governor Boutwell, of Massachusetts, had declared for Mr. Bryan's election. Besides these direct reasons for pressing the colonial question, the Democrats had an equally cogent one in the fact that the Republicans were insistent upon the importance of the currency question. To allow the Republicans to focus public attention upon the latter issue would be to repeat the previous campaign, but with less chance *a priori* for Democratic success than in 1896; hence, the refusal of the Democrats to permit themselves to be diverted from what they considered to be the main issue. The Democratic attack ("Democrats" are, in general, classed here for convenience as those opposed to the Republicans on this single question) upon the Republican policy in Porto Rico, and more especially in the Philippines, was based mainly upon the theoretic ground that government without the consent and representation of the governed is tyranny; the Republican defence was, in the main, that no other course was or had been possible in the premises.

Porto Rican Tariff.—In reference to Porto Rico the issue was upon the tariff of 15 per cent. of the Dingley tariff, laid by the 56th Congress upon exports from Porto Rico into the United States and *vice versa* (see PORTO RICO). The position taken by the two parties upon this subject is shown as follows:

"Porto Rico and the Philippine Islands became a part of the United States on the 11th of April, 1899. . . . The rights to be enjoyed by the people of these new acquisitions depend upon the Constitution of the United States. . . . The powers of Congress include the power to legislate for the government of territories, and the prohibitions upon Congress for the protection of the civil rights of the people, extend to all persons within the jurisdiction of the United States. . . . The constitutional clause forbidding unequal taxation is as vital and important a prohibition upon Congress as any one contained in the first ten amendments to the Constitution. What authority is there for singling out certain prohibitions upon Congress and saying that they apply to the territories, while others do not? The House committee on ways and means, in conformity with recommendations of the President and the secretary of war reported to the House in favor of free trade for Porto Rico. Suddenly and later a bill was reported by the same committee imposing a tariff upon Porto Rico. Dr. Jekyll's transformation was not more miraculous or more complete. . . . Free sugar from the Philippines was the shadow overhanging the expansion policy of the administration. . . . It was not the small crop of sugar which Porto Rico contributes

"The President, in his annual message, recommended that 'Our plain duty is to abolish all customs tariffs between the United States and Porto Rico and give her products free access to our markets.' It became apparent soon after this suggestion, however, that conditions in the island, owing to the destruction of property by the hurricane and the absolute inability of the people to pay taxes, . . . made it imperative that some temporary provision must be made by the United States for the carrying on of the local government, and at the same time it was equally apparent that Congress should not take a step which could be looked upon as establishing a precedent for demanding absolute free trade between the United States and any and all island territory which came to it. Absolute freedom of trade between the United States and the Philippines, with their population of nearly 10,000,000 of Asiatic cheap labor, would have proved damaging to the labor interests of the United States. . . . It was for this specific purpose of protecting the labor of the United States . . . that Republican leaders determined to insist upon a mere shadow of tariff duties between Porto Rico and the United States. . . . The bill as finally passed . . . provides that . . . the duties and taxes collected in Porto Rico shall . . . be used for the

. . . that excited the interest of the sugar trust, and made it determine to bend a President and a Congress to its will; it was the question whether the sugar monopoly should be broken down by free sugar from the Philippines. . . .”—*From the “Campaign Text-book,” issued by the Democratic National Committee.*

government and benefit of Porto Rico.”
—*From the “Campaign Text-book” issued by the Republican National Committee.*

Philippine Insurrection.—The issue in regard to the Philippines was a complex one, covering every phase of the colonial problem and extending to nearly all the acts of the administration bearing thereon since the conclusion of the Spanish War. The policy of the administration in the Philippines previous to the ratification of the treaty of Paris was criticised during the campaign somewhat as follows: 1. The correspondence of the government asking for information as to the commercial value and advantages of the Philippines indicated an early and unacknowledged desire on its part for their possession. 2. United States officers accepted the co-operation of the Filipinos against Spain and permitted them to believe that independence would be given them. 3. A representative Philippine government was set up by the natives on September 15, 1898, without opposition from the United States. 4. Later the policy of the administration was abruptly altered. The Filipinos were debarred from the sessions of the Peace Commission at Paris, and the President instructed his commissioners to exact the entire archipelago, instead of only an island or coaling station. 5. While the treaty was pending in the Senate the President, without warrant of congressional or other authority, directed General Otis to proclaim the extension of United States authority “to the whole of the ceded territory,” thus arousing the animosity of the Filipinos. 6. An attack on the Filipinos, reported in the United States as an attack by the Filipinos, was the occasion for the final ratification of the treaty.

To charges of this nature the President in his letter of September 8, accepting the nomination of the Republican party to the presidency, replied in part as follows: “Nobody who will avail himself of the facts will longer hold that there was any alliance between our soldiers and the insurgents, or that any promise of independence was made to them. . . . On May 26, 1898, Admiral Dewey was instructed by me to make no alliance with any party or faction in the Philippines that would incur liability to maintain their cause in the future, and he replied, ‘. . . I have entered into no alliance with the insurgents or with any other faction.’ . . . It has been asserted that there would have been no fighting in the Philippines if Congress had declared its purpose to give independence to the Tagal insurgents. The insurgents did not wait for the action of Congress. . . . Before the treaty was ratified in the Senate . . . the insurgents attacked the American army, after being previously advised that the American forces were under orders not to fire upon them, except in defence. The papers found in the recently captured archives of the insurgents demonstrate that this attack had been carefully planned for weeks before it occurred.”

Instructions to the Paris Peace Commission.—The President further made public excerpts from his instructions to the Paris Peace Commission. These excerpts and the comments made upon them by Anti-Imperialists are in part as follows:

“When the Senate asked for these instructions they were refused on the ground that it would be ‘incompatible with the public interest’ to make them public. Now, in party interest they are unveiled, but in what form? Evidently in a garbled form.” “Why did not the President publish his instructions to the Paris commissioners in full?” “Was it because his first instructions were not to take the Philippines? It has been openly asserted and never authoritatively denied that such was the tenor of his original policy. The mutilated document looks very much as if this were entirely true; as if the President were as sure in August, 1898, that ‘plain duty’ required us to get out of the Philippines, as he was in December, 1899, that it commanded us to give Porto Rico free trade; and as if powerful commercial

“In addressing the Peace Commission before its departure for Paris, I said: ‘We took up arms only in obedience to the dictates of humanity and in the fulfilment of high public and moral obligations. We had no design of aggrandizement and no ambition of conquest. . . . It is my earnest wish that the United States, in making peace, should follow the same high rule of conduct which guided it in facing war. It should be as scrupulous and magnanimous in the concluding settlement as it was just and humane in its original action. Our aim in the adjustment of peace should be directed to lasting results, and to the achievement of the common good under the demands of civilization rather than to ambitious designs. Without any original thought of com-

interests turned him about in one case, as in the other."

"Why did not President McKinley recognize that right (of independence) of the Philippine islanders? Because, as he said in his instructions to his Peace Commissioners, . . . 'we must either hold the Philippine Islands or turn them back to Spain.' What? . . . Did it never occur to the President . . . that there was another alternative, which should at the very start have suggested itself to a Republican President as the most natural—namely, to let them, according to our own precedent and that of Cuba, have an independent government of their own? . . . Did our victory at Manila create for us responsibilities essentially different from those which were created for us by our victory at Santiago in Cuba? . . . But nobody finds that our Cuban responsibilities make it impossible for us to tolerate and recognize the independence of Cuba. . . . There is no candid man living who will not admit that had the President instructed our Peace Commissioners to embody in the peace treaty the same provisions with regard to the Philippines as to Cuba, and had he treated the Filipinos accordingly, . . . not a drop of blood would have been shed, as no blood has been shed in Cuba since her liberation."—*Carl Schurz, Cooper Union speech.*

The Treaty of Paris.—But while Anti-Imperialists criticised the policy of the administration leading up to the ratification of the treaty of Paris, they were also inclined to criticise Mr. Bryan and the Democratic party, without whose aid the treaty could not have been ratified. In this latter criticism the Republicans concurred; for, they said, from the war and the treaty have sprung the responsibilities which we cannot now disavow. If Mr. Bryan considers that the United States should not maintain sovereignty over the Philippines, he should not have lent aid to us in assuming sovereignty. By his advocacy of the ratification of the treaty he became partner to the act, and cannot now in equity deny its consequence. The defence and criticism of Mr. Bryan's position may be given as follows:

"I believed it was better to ratify the treaty and end the war, release the volunteers, remove the excuse for war expenditures, and then give to the Filipinos the independence which might be forced from Spain by a new treaty. . . . I thought it safer to trust the American people to give independence to the Filipinos than to trust the accomplishment of that purpose to diplomacy with an unfriendly nation. Lincoln embodied an argument in the question when he asked, 'Can aliens make treaties easier than friends can make laws?' With the treaty ratified, a clean-cut issue is presented between a government by consent and a government by force, and Imperialists must bear the responsibility for all that happens until the question is settled. If the treaty had been rejected, the oppo-

plete or even partial acquisition, the presence and success of our arms in Manila imposes upon us obligations which we cannot disregard.'"

On October 28, 1898, while the Peace Commission was continuing its negotiations in Paris, the following additional instructions were sent:

"It is undisputed that Spain's authority is permanently destroyed in every part of the Philippines. To leave any part in her feeble control now would increase our difficulties and be opposed to the interests of humanity. Nor can we permit Spain to transfer any of the islands to another power. Nor can we invite another power or powers to join the United States in sovereignty over them. We must either hold them or turn them back to Spain. Consequently, grave as are the responsibilities and unforeseen as are the difficulties, the President can see but one plain path of duty, the acceptance of the Archipelago. Greater difficulties and more serious complications—administrative and international—would follow any other course. The President has given to the views of the commissioners the fullest consideration, and in reaching the conclusion above mentioned in the light of information communicated to the commission and to the President since your departure, he has been influenced by the single consideration of duty and humanity."—*President McKinley, September 8, 1900.*

"He (Mr. Bryan) thought the people of the Philippine Islands were entitled to govern themselves. He thought we had no constitutional power to govern them. He thought that to undertake that government was to convert this government into an empire. He thought it was to do infinite mischief to our citizenship, and infinite wrong to the people we were to subjugate. Now, so believing, Mr. Bryan came to Washington and . . . put forth all his power as a great political leader to secure the adoption of this treaty. . . . The treaty, whose adoption Mr. Bryan procured, . . . declared the people of the Philippine Islands subjects of the United States. It made their warfare insurrection against the government of the United States. It made it the constitutional duty of the

nents of imperialism would have been held responsible for any international complications which might have arisen before the ratification of another treaty." "That treaty severed the chains of connection with the Filipinos according to European ideas. But that treaty could not confer upon us a title to the Philippines, because we must deal with the Filipinos according to American principles, and not according to European ones. There has never been a moment from that time to this when we could not have promised the Filipinos independence and stopped the war and brought our soldiers home and made this nation respected abroad." "If the Bacon resolution had been adopted by the Senate and carried out by the President, either at the time of the ratification of the treaty or at any time afterward, it would have taken the question of imperialism out of politics and left the American people free to deal with their domestic problems. But the resolution was defeated by the vote of the Republican Vice-President, and from that time to this a Republican Congress has refused to take any action whatever in the matter." "I did not make the treaty. I am not responsible for a treaty that gave independence to the Cubans and denied it to the Filipinos. The President is responsible for that, and if he had given to the Filipinos the same assurance of independence that he gave to the Cubans, not a gun would have been fired in Manila, and those people would have been our friends to-day."—W. J. BRYAN, *from speech of acceptance, July 12, and Madison Square Garden speech, October 16.*

President to put that insurrection down. It also affirmed and exercised the power of the United States to purchase sovereignty over ten million people for money. . . . Mr. Bryan says he thought the mischief would be cured by the passage of the Bacon resolution affirming our purpose to give that people self-government hereafter. Mr. Bryan . . . must have known that the passage of such a resolution was quite improbable, and that if it had passed the Senate, it would have been of no vigor or effect whatever, . . . unless it were agreed to by the House and approved by the President. . . . A treaty is greater than a common statute, because it not only is the law of the land, but it pledges the faith of the American people. . . . But Mr. Bryan says he wanted to get the matter out of the hands of the President, and into the hands of Congress. Now, in the first place, his whole theory was and is that the Philippine Islands is a matter with which Congress has rightfully or constitutionally nothing to do; and, in the second place, the method he took was not calculated to take the matter out of the hands of the President, or to put it into the hands of Congress. But he says he wanted to get peace with Spain, and he did not want to run the risk of making amendments to the treaty to which Spain might not consent. But he knew very well that the war with Spain was over. Her fleets were shattered, her armies were captive, she had sued for peace. . . . How idle is any suggestion that Spain would not gladly have acquiesced in an amendment of the treaty which put the Philippine Islands on the same footing with the people of Cuba! A cable dispatch would have brought the eager consent of Spain to such an amendment in twenty-four hours."—Senator GEORGE F. HOAR, *in October "North American Review."*

Present Philippine Policy.—Upon the actual administration of the Philippines subsequent to the ratification of the treaty of Paris and the avowed intention of the Republican leaders to retain the Filipinos as subject peoples, giving them, however, as much self-government as they were capable of exercising, the Democrats submitted two propositions—one of theory, the other of fact. As to the first, they claimed that the basis of American laws and institutions was the *dictum* in the Declaration of Independence that "governments derive their just powers from the consent of the governed." The American people had never hitherto swerved from this principle—the principle, as applied to territorial expansion, that "the Constitution follows the flag." If this principle was now adhered to, the Americans had no title to the Filipinos; if it was not adhered to, then the Americans waived their guarantee that they themselves should be governed under the Constitution. On the questions of fact involved the Democrats maintained that the Filipinos were capable of self-government and also that the arguments advanced by the Republicans, tending to show the expediency of the retention of the Philippines by the United States, were fallacious. The Republicans, in defence of their policy abroad, took, in general, the negative side of the contentions and propositions advanced by the Democrats and Anti-Imperialists. In more detail and in order, the main arguments of the two parties may be given as follows:

The Principle of the "Consent of the Governed."—To the Democratic contention, that by principle and precedent American government is government with "the consent of the governed," the Republicans replied in several ways. It was stated, in the first place, that this was not a fact; that the so-called principle of "government by consent" was an exploded aphorism, borrowed by Jefferson from abroad, useful in its time and place, but unsuited and impracticable in its literal rendering to the actions required of a great government and world power. In the second place, and this was more insisted upon by Republicans, the Democrats had themselves denied the application of the aphorism in question. For some years they had been engaged in disenfranchising the negroes of the South; assuredly, without the "consent" of the negroes. Already in four States the bulk of the negroes had been denied the ballot, and in a fifth the machinery for that purpose had been set in motion. To this *tu quoque* argument many Democratic leaders did not readily respond. Senator Tillman, however, replied directly and forcibly, both in the Senate and in later writings. He said, in effect, that the South had inherited and was forced to contend with the negro problem; she had not sought it, it was "the white man's burden" thrust upon her. She had been constrained to deprive some of the negroes of a share in the government. Formerly she had used with the knowledge and without opposition from Republicans force, tissue ballots, and bribery. But the South was weary of these methods, and had resorted to legal ones. In any event, this constituted no reason why the Republicans, without necessity, wantonly and for conquest should set up a similar, but more thorough, government by force in the Philippines. "You deal with the Filipinos," said Senator Tillman, "just as we deal with the negroes, only you treat them a heap worse." A third answer made by Republicans to Democratic criticisms of "government without consent" was that the Filipinos would be given all the self-government which they were capable of exercising (this will be more fully discussed further on in this article).

Title to the Philippines.—Upon the question of America's just title to the Philippines there was a sharp difference of opinion. The constitutional and international aspects of this (see article COLONIES) were not much discussed during the campaign, owing, doubtless, to the difficulty of rendering them clear. The ethical and historical aspects of expansion, however, were widely discussed. The position of the principles of the two parties in regard to the facts of the title of the United States to the Philippines is shown by their statements as follows:

"If governments derive their just power from the consent of the governed, it is impossible to secure title to people either by force or by purchase. We could extinguish Spain's title by treaty, but if we hold title we must hold it by some method consistent with our ideas of government. . . . If we buy Spain's title we are not innocent purchasers. But even if we had not disputed Spain's title, she could transfer no greater title than she had, and her title was based on force alone. We cannot defend such a title, but . . . we can honorably turn the title over to the party in possession."—W. J. BRYAN, *August 8*.

"Our title is good. Our Peace Commissioners believed they were receiving a good title when they concluded the treaty. The executive believed it was a good title when he submitted it to the United States Senate for ratification. The Senate believed it was a good title when they gave it their Constitutional assent, and the Congress seems not to have doubted its completeness when they appropriated twenty million dollars provided by the treaty. . . . It is worthy of note that no one outside of the United States disputes the fullness and integrity of the cession."—WILLIAM MCKINLEY, *September 8*.

Historical Precedents.—In supporting or attacking the validity of the American title to the Philippines both parties dwelt largely upon the precedents previously established by the United States in the acquirement of territory. The following are representative statements upon this subject:

"The forcible annexation of territory to be governed by arbitrary power differs as much from the acquisition of territory to be built up into States as a monarchy differs from a democracy. . . . The acquisition of the Louisiana territory, Florida, Texas and other tracts . . . enlarged the republic, and the Constitution followed the flag into the new territory. It is now proposed to seize upon distant territory, already more densely populated than

"Our title is practically identical with that under which we hold our territory acquired since the beginning of the government, and under which we have exercised full sovereignty and established government for the inhabitants."—WILLIAM MCKINLEY, *September 8*.

"Every acre of territory acquired since the adoption of the Constitution has been acquired against the protest and generally against the sanguinary opposition of the inhabitants. The con-



WILLIAM JENNINGS BRYAN.



ADLAI E. STEVENSON.

our own country, and to force upon the people a government for which there is no warrant in our Constitution or our laws."—WILLIAM J. BRYAN, *August 8*.

"A convention of the people of Florida petitioned for the protection of the United States as an integral part of the United States, and it is notorious that the inhabitants were eager for annexation. . . . In every acquisition of territory we ever made we meant to make States of it. Jefferson expressly says so in his Louisiana message. There was no nation owning or dwelling on the territory; no people in the sense of the Declaration (of Independence); no organized national life; and certainly, in every case but Louisiana, we had every reason to believe that the few scattered dwellers in the territory approved the transaction."—SENATOR GEORGE F. HOAR (*Rep.*), in the Senate, quoted by the Democratic National Committee.

Future Philippine Policies Defined.—The policy which should be pursued in the Philippines, in view of the existing conditions there, and of the constitutional relation in which the United States now stands to them, was stated by the two presidential nominees as follows:

"If elected I shall convene Congress in extraordinary session as soon as I am inaugurated, and recommend an immediate declaration of the nation's purpose, first to establish a stable form of government in the Philippine Islands, just as we are now establishing a stable form of government in the island of Cuba; second, to give independence to the Filipinos, just as we have promised to give independence to the Cubans; third, to protect the Filipinos from outside interference while they work out their destiny, just as we have protected the republics of Central and South America, and are, by the Monroe Doctrine pledged to protect Cuba."—W. J. BRYAN, *August 8*.

"It is our purpose to establish in the Philippines a government suitable to the wants and conditions of the inhabitants, and to prepare them for self-government, and give them self-government, when they are ready for it, and as rapidly as they are ready for it. . . . [The issue] is whether we shall be responsible for the government of the Philippines with the sovereignty and authority which enable us to guide them to regulated liberty, law, safety, and progress, or whether we shall be responsible for the forcible and arbitrary government of a minority without sovereignty and authority on our part, and with only the embarrassment of a protectorate which draws us into their troubles without the power of preventing them."—WILLIAM MCKINLEY, *September 8*.

Critics of Mr. McKinley said of his statement, as given above, that it meant imperialism no matter how great a measure of self-government was given to the Filipinos, and for precisely the reason that self-government was to be *given* to the islanders and not to be *accorded* them as a *right*. "What are they (the Republicans) going to do with the Filipinos?" Mr. Bryan asked. "They are going to give them as large a measure of self-government as their welfare and our duties will permit. Who is to decide their welfare? We. Who is to decide our duty? We. What has the Filipino to do with it? Nothing at all." Opponents of Mr. Bryan, on the other hand, contended that his plan for Filipino independence was, to say the least, at variance with his scheme for establishing a stable form of government in the Philippines. "If," said Governor Roosevelt, "we have a right to establish a stable form of government in the islands, it necessarily follows that it is not only our right but our duty to support that government until the natives gradually grow fit to sustain it themselves. How else will it be stable? The minute we leave it, it ceases to be stable." If, conversely, the Filipinos "are now entitled to independence, they are also entitled to decide for themselves whether their government shall be stable or unstable, civilized or savage, or whether they shall have any government at all; while it is, of course, equally evident that under such conditions we have no right

whatever to guarantee them against outside interference any more than we have to make such a guarantee in the case of the Boxers." A number of Republicans and independents took a middle ground on this subject, and without criticising Mr. Bryan's proposed policy in itself, claimed that it only differed in terms, and not practically, from the policy advocated by President McKinley. Sovereignty, they said, would have to be equally exercised by the United States in either case, and the practical outcome, so far as the Filipinos were concerned, would be about the same. In opposition to this view it was said that there was a wide difference between acts of sovereignty designed to relinquish the Philippines and acts of sovereignty having for their purpose the continued subjection of the Filipinos. Under the Paris treaty Congress was now obliged formally to legislate upon the Filipino question, but Congress could by legislation either renounce or perpetuate its sovereignty. Mr. Bryan, moreover, could withdraw the federal troops from the Philippines and recognize Filipino independence so soon as there was established a *de facto* government, organized and patterned by the natives themselves. With this government treaties could be executed as with any other government guaranteeing commercial and treaty rights to the United States and giving to the Filipinos assurance of protection from outside interference. Such a treaty would no more make the United States responsible for the internal workings of the Philippine government than its implied protectorate over Mexico and Venezuela makes it responsible for those governments.

Wisdom and Expediency of Relinquishing the Philippines.—The discussions on the wisdom and expediency of relinquishing the Philippines followed logically from the counter-proposals as to their disposition made by President McKinley and by Mr. Bryan. The arguments on this aspect of the colonial question were hardly satisfactory, since divergent and contradictory evidence was presented by the opposing parties upon many of the essential matters of fact involved. It did not seem possible for many voters in the time allowed them for consideration to decide in accordance with the credibility of the testimony adduced, between such extreme statements as that the Filipinos as a whole were an organized people capable of self-government and that they were a number of unorganized, semi-civilized, tribal communities hostile to each other; that the patriotic action of Aguinaldo and his followers deserved recognition by freedom and that the traitorous conduct of Aguinaldo deserved punishment; that the retention of the Philippines would be financially profitable and that it would be financially disastrous. Governor Roosevelt said: "To grant self-government to Luzon under Aguinaldo would be like granting self-government to an Apache reservation under some local chief." The Philippine Commission (see PHILIPPINES, paragraph Philippine Commission) took much this view of the question, as did also other authorities. Senator Hoar, Carl Schurz, and others disagreed with this position, and asserted that the Filipinos were capable of self-government. Mr. Bryan said upon this subject: "Admiral Dewey in an official report to the Navy Department declared the Filipinos more capable of self-government than the Cubans, and said that he based his opinion upon a knowledge of both races. . . . Once admit that some people are capable of self-government and that others are not, and that the capable people have a right to seize upon and govern the incapable, and you make force—brute force—the only foundation of government and invite the reign of the despot."

The argument of trade expansion with reference to retaining the Philippines was presented on its affirmative side indirectly in the report of the Philippine Commission (see PHILIPPINES) and directly in the following statement of Senator Lodge: "We make no hypocritical pretences of being interested in the Philippines solely on account of others. While we regard the welfare of those people as a sacred trust, we regard the welfare of the American people first. We see our duty to ourselves as well as to others. We believe in trade expansion. By every legitimate means within the province of government and Constitution we mean to stimulate the expansion of our trade and open new markets." Mr. Bryan's answer to this argument was quoted with approval by the anti-imperialist press, and was in part as follows: "It is not necessary to own people in order to trade with them. We carry on trade to-day with every part of the world, and our commerce has expanded more rapidly than the commerce of any European empire. We do not own Japan or China, but we trade with their people. We have not absorbed the republics of Central and South America, but we trade with them. . . . Trade cannot be permanently profitable unless it is voluntary. When trade is secured by force the cost of securing it and retaining it must be taken out of the profits, and the profits are never large enough to cover the expense. Such a system would never be defended but for the fact that the expense is borne by all the people, while the profits are enjoyed by the few."

A second argument for the retention of the Philippines was that the United States had entered into international relations from which it could not withdraw with honor. "If others," said President McKinley, "would shirk the obliga-

tions imposed by the war and the treaty we must decline to act further with them, and here the issue is made. . . . Nations which go to war must be prepared to accept its resultant obligations, and when they make treaties must keep them." In reply the Anti-Imperialists stated that the question was one of false pride, not of honor. As a nation without colonies the United States had gained the respect of every country; a true pride would make her prefer the continuance of this respect, rather than much praise offered from motives not disinterested. The Anti-Imperialists said further that sovereignty over the Philippines would require the continuance of a large standing army, in itself a menace to republican institutions; the Republicans answered that this large standing army numbered at present about one soldier for every thousand inhabitants of the United States, but that under the proposed Democratic plan it would have to be largely increased.

THE CURRENCY ISSUE.

The Currency Question.—The currency question was an issue of the campaign, taken up by the Democrats only when Mr. Bryan had made it evident that he would not otherwise accept the presidential nomination at their hands. The Republicans readily accepted the issue thus unwillingly presented by the Democrats, for the Republican leaders felt that, this issue alone considered, the country would return them to power by an even larger majority than it had in 1896. Prosperity, instead of the disaster so freely prophesied by silver advocates, had accompanied the maintenance of the gold standard. Laws had been passed by the Republicans entrenching the financial credit of the nation and redeeming the pledges made in convention in 1896. During the intervening four years many former bimetalists had, it was believed, accepted with the return of prosperity to themselves and the country the principles of monometallism and of conservative finance. The independents, Republicans, and Gold Democrats who were impatient of the policy of the administration in the Philippines might be expected to consider twice before throwing ballots for a party which promised silver legislation with its consequent ills to business interests. Altogether the Republicans preferred the silver issue to any other.

Importance of the Currency Question.—Directly after the Democratic convention a considerable portion of the press was inclined to treat the currency question lightly and to credit the Democratic convention with having found the true "paramount issue" in imperialism. It was assumed that without further legislation the gold standard could not be disturbed. And even if Mr. Bryan were elected it was considered improbable that in the near future any bills favorable to silver could be passed through the House, and more especially through the Senate. Late in July, however, Mr. Lyman B. Gage, secretary of the treasury, stated officially that nothing in existing law prohibited a President, so inclined, from paying the government's running expenses in silver, and that such action, on the threat of it, would soon place the federal finances upon a silver basis. (See CURRENCY REFORM.) Other writers then pointed out further defects in the Republican currency bill, which had been popularly supposed to have absolutely safeguarded monometallism. Chief, perhaps, among the defects noted was the inadequate provision made in the bill for the maintenance of a gold reserve to redeem United States notes and Treasury notes. For while the bill forbade that these notes, when once redeemed, should be used again to meet deficiencies in the current revenues, and so be immediately presented by the public for a second redemption, yet they could be used for any other lawful purpose. In times of necessity then they could, and of course would, be paid out on demand in exchange for silver certificates and National Bank notes. They would thus become for a second, or an indefinite number of times, a direct lien upon the gold reserve, which reserve was in this way made sponsor for all the credit money of the country. (See CURRENCY REFORM.) This credit money had been considerably increased by the national banking clauses of the currency bill, and while no embarrassment was anticipated from the additional paper money therein authorized, yet if the Democrats should come into office a financial panic might ensue before which no treasury reserve could stand. By these and similar criticisms of the Currency Reform bill, the Republicans strengthened the political issue against the Democrats at the expense of their own legislation. Incidentally public attention was to some extent diverted from the discussion of imperialism. Mr. Bryan was asked whether, in the event of his election, he would order his secretary of the treasury to pay out the government expenses in silver. To this question he declined to reply, possibly because he considered that the Republicans would have so much the more political ammunition if he answered "yes," and that the silver wing of his party might be alienated if he answered "no." In the discussions which followed economic arguments for or against free silver were much less employed than in 1896. The Republicans were content to bring forward again the conclusions they had arrived at during the previous campaign, while the Democrats simply renewed their allegiance to the Chicago platform. "The Democratic party," said Mr. Bryan, "remains the

steadfast advocate of the gold and silver coinage of the Constitution, and is not willing that other nations shall determine for us the time and manner of restoring silver to its ancient place as a standard money." The national banking clauses of the currency bill were attacked by Mr. Bryan on the ground that they extended the privileges of private banks of issue and insured a perpetual national debt. Similarly Mr. Bryan criticised the provisions made in the bill for the retirement of the government greenbacks. On this question he averred that the Democrats and Populists were practically in unison. "It is true," he said, "that the Populists believe in an irredeemable greenback, while the Democrats believe in a greenback redeemable in coin, but the vital question at this time, so far as paper money is concerned, is whether the government or banks shall issue it. There will be time enough to discuss the redeemability of the greenback when the greenback itself is saved from the annihilation which now threatens it." In accepting the nominations of the Populists and Silver Republican parties for the presidency, Mr. Bryan, it was pointed out by his opponents, had necessarily pledged himself to the *immediate* restoration of the free coinage of silver. For the platforms of those parties were much more drastic on that question than the Democratic platform, and the weight of their party opinion more strongly supported silver legislation. As the nominee of the Democratic party alone Mr. Bryan might, if elected, postpone or shelve the matter to the satisfaction of his leaders, but as the case stood the issue would "admit of no delay and suffer no postponement." This Mr. Bryan was not inclined either to admit or to deny.

Prosperity and the Currency.—The only really new matter brought into the question in the campaign was the argument of "prosperity." Republicans quoted remarks such as the following, made by Mr. Bryan in 1896: "It is only necessary to note the increased number of failures in order to know that a gold standard is ruinous to merchants and manufacturers" (speech at Madison Square Garden). "We honestly believe that there can be no permanent, no general prosperity in this country until we stop the conspiracy of those who would make gold the only standard of the world" (speech at Rhinebeck, N. Y.). The course of events, Republicans stated, proved the falsity of Mr. Bryan's prophecies and of the economic assumption on which they were based. For four years the country had enjoyed prosperity in greater measure than ever before during its history; this showed that in monometallism and Republican administration lay the safety of the people. The Republican position and Mr. Bryan's answer are shown below:

"If an increase in the volume of the currency since 1896, although unpromised by the Republicans, and unexpected, has brought improvements in industrial conditions, this argument, instead of answering the arguments put forth in favor of bimetallism, only confirms the contention of those who insisted that more money would make better times. . . . The prosperity argument which the Republicans bring forward to answer all complaints against the administration, will not deceive the farmer. He knows that two factors enter into his income; first, the size of his crop, and, second, the price which he receives for the same. He does not return thanks to the party in power for favorable weather and a bountiful harvest, and he knows that the Republican party has no policy which insures a permanent increase in agricultural prices. Since he sells his surplus in a foreign market, he is not a beneficiary of the tariff, and since he produces merchandise and not money, he does not profit by the appreciation of the dollar. He knows that the much-vaunted prosperity, of which he has never had his share, is on the wane . . . and that there is already a marked tendency toward a decrease in the output of the factories. He knows also that discoveries of gold, famines

"Four hundred and thirty-six million dollars of gold have been added to the gold stock of the United States since July 1, 1896." "The volume of our currency per capita is greater than it has ever been. It was \$21.10 in 1896. It had increased to \$26.50 on July 1, 1900, and \$26.85 on September 1, 1900. Our total money on July 1, 1896, was \$1,504,434,966 . . . and \$2,096,683,042 on September 1, 1900." "The gold standard has been reaffirmed and strengthened. . . . A tariff which protects American labor and industry and provides ample revenue has been written in public law. . . . The world's markets have been opened to American products, which go now where they have never gone before. We have passed from a bond-issuing to a bond-paying nation . . . from a deficiency in revenue to a surplus." "Our industrial and agricultural conditions are more promising than they have been for many years; probably more so than they have ever been. Prosperity abounds everywhere throughout the republic. . . . The money-lender receives lower rewards for his capital than if it were invested in active business. The rates of interest are lower than they have ever been in this country, while those things which are produced on the farm and in

abroad, and war on three continents have not been able to raise the price of farm products as rapidly as trusts and combinations have raised the price of the things which the farmer buys."—WILLIAM J. BRYAN, *August 23*.

the workshop and the labor producing them have advanced in value."—WILLIAM MCKINLEY, *July 12 and September 8*.

National Banking Privileges.—To the Democratic, and more especially to the Populist contention, that the administration, instead of reserving the power to itself, had increasingly given over to private banks the profitable undertaking of issuing money, Republicans replied that such issues of money were required to be guaranteed by United States bonds, that the main clause in the currency bill extending privileges to banks of issue was only valid if and when banks returned to the United States government bonds bearing 3, 4, and 5 per cent. interest, and took out in exchange bonds bearing only 2 per cent. interest. Mainly because of this clause more than \$300,000,000 of high interest bonds had been refunded at 2 per cent., a lower rate than that enjoyed by any other country, and with a consequent saving to this government of many millions of dollars.

THE TRUST ISSUE.

Position of the Two Parties.—In accordance with the planks in their respective platforms relative to trusts, both parties spoke against monopolistic power during the progress of the campaign, and promised corrective legislation. Democratic strictures upon trusts were, however, more severe than those passed by Republicans, and the reformatory measures advocated by the former were stated more definitely and in greater detail. This difference is indicated by the subjoined remarks:

"The appalling growth of combinations in restraint of trade during the present administration proves conclusively that the Republican party lacks either the desire or the ability to deal with the question effectively. . . . Our platform . . . pledges the party to an unceasing warfare against private monopoly in nation, State, and city. . . . If elected, it shall be my earnest and constant endeavor to fulfil this promise in letter and spirit. I shall select an attorney-general who will, without fear or favor, enforce existing laws: I shall recommend such additional legislation as may be necessary to dissolve every private monopoly which does business outside of the State of its origin; and, if contrary to my belief and hope, a constitutional amendment is found to be necessary, I shall recommend such an amendment as will . . . empower Congress to protect the people of all the States from injury at the hands of individuals or corporations engaged in interstate commerce."—WILLIAM J. BRYAN, *September 17*.

"Combinations of capital which control the market in commodities necessary to the general use of the people, by suppressing natural and ordinary competition . . . are obnoxious to the common law and the public welfare. They are dangerous conspiracies against the public good and should be made the subject of prohibitory or penal legislation. Publicity will be a helpful influence to check the evil. Uniformity of legislation in the several States should be secured. Discrimination between what is injurious and what is useful and necessary in business operations is essential to the wise and effective treatment of this subject. Honest co-operation of capital is necessary to meet new business conditions and extend our rapidly increasing foreign trade, but conspiracies and combinations intended to restrict business, create monopolies and control prices should be effectively restrained."—WILLIAM MCKINLEY, *September 8*.

Democratic Charges.—The Democrats, generally, accused the Republicans of bad faith in introducing into the Republican platform a resolution against monopolistic trusts and in speaking against trusts during the campaign. They contended that the large number of trusts formed within the last four years and under the Dingley tariff (see the article TRUSTS) and the failure of the Republicans, although in possession of both Houses, to enact any anti-trust legislation (see THE UNITED STATES, paragraph The Trust Problem) was evidence against their sincerity in the matter. They averred, further, that existing laws had not been enforced. From the record sent by the attorney-general to the last Congress it appeared that under the Sherman Anti-trust act of 1890 only three cases had been instituted against trusts during President McKinley's administration, while conversely and in the same period more than four hundred new combinations had been organized. Finally, many Democrats directly accused the Republicans of enacting "trust-breeding" measures and of making laws favorable to monopoly and inimical to labor. Mr.

Richard Olney, secretary of state under President Cleveland and an opponent of Mr. Bryan in 1896, stated in a letter made public in September, 1900, that an endorsement of the Republican administration at the coming election would "mean that the American people sanction a syndicated presidency—a presidency got for the Republican party by the money of a combination of capitalists intent upon securing national legislation in aid of their particular interests. . . . It would mean that the American people either do not see or, seeing, approve the great and growing, if not already overwhelming, influence of money in our politics."

Republican Replies.—In answer to these and similar criticisms the Republicans denied in general terms that they were allied with moneyed interests. They pointed out that the party in power is customarily, and for political reasons, necessarily accused of improper conduct by the party out of power. They claimed, moreover, that the Democrats were in poor position to make such criticisms. Mr. Clark, of Montana (see MONTANA), had been denied admittance to the Senate on account of lavish and undemocratic expenditures of money. Mr. Croker, of New York, who had risen to national importance by his cast of the balance of power held by him at the National Democratic Convention, had admitted to have bought and sold stock in a trust formed expressly to control the price of a necessity of life (see NEW YORK, paragraph Ice Trust)—a trust against which legal proceedings had been instituted by the State, and of which many of the stockholders, including New York's chosen representative on the convention platform committee, which so scathingly denounced trusts, were trusted and prominent Democrats. Therefore, Democratic action had itself rendered absurd the contention that only Democratic rule would give "exact justice to all, special privileges to none." The Republicans stated that while the increasing power of trusts presented a grave problem in legislation, there was nothing to be gained by "wrong-headed attacks on the whole industrial system." "No good whatever," said Governor Roosevelt, "is subserved by indiscriminate denunciation of corporations generally and of all forms of industrial combinations in particular; and when the public denunciation is accompanied by private membership in the great corporations, the effect is, of course, to give an air of insincerity to the whole movement. Nevertheless, there are real abuses, and there is ample reason for striving to remedy these abuses. . . . The first thing to do is to find out the facts; and for this purpose publicity as to capitalization, profits, and all else of importance to the public is the most useful measure. . . . Much can be done by taxation. Even more can be done by regulation, by close supervision, and the unsparing excision of all unhealthy, destructive, and anti-social elements."

Democratic Rebuttal.—To this view of the case may be opposed Mr. Bryan's remark: "Republicans who formerly abhorred a trust now beguile themselves with the delusion that there are good trusts and bad trusts, while in their minds the line between the two is becoming more and more obscure." To the charge, carried over from the campaign of 1896, though not so much used in 1900 as at that time, that Mr. Bryan, by insisting that the price of products was controlled by capitalists, was arraying the "classes against the masses" and conducting "a wrong-headed attack on the whole industrial system," may be opposed Mr. Bryan's statement in his formal letter of acceptance: "The Democratic party makes no war upon honestly acquired wealth, neither does it seek to embarrass corporations engaged in legitimate business; but it does protest against corporations entering politics and attempting to assume control of the instrumentalities of government." The Hon. Frank S. Monnett, in discussing what Mr. Bryan could do against trusts, said: "The Interstate Commerce Commission has officially called attention to the open and notorious violation (of the law) by the common carriers of the United States. The National Shippers' Association and other shippers have appealed in vain to the executive officers for relief. A friendly executive could entertain such appeals, and should take cognizance of the official reports of such bodies as the Interstate Commerce Commission and the reports of the Industrial Commission." In this connection Mr. Bryan said: "The Democratic party is pledged to legislation which will empower the (Interstate Commerce) commission to protect individuals and communities from discrimination and the public at large from unjust and unfair transportation rates." Mr. Bryan also recommended that all protective tariffs be taken from trust products.

PROGRESS OF THE CAMPAIGN.

Defining the Issues of the Campaign.—The presidential campaign may be said to have begun with the session of the 56th Congress, for the legislation enacted at that session and the attitude of the two parties and of prominent members of them upon important questions acted upon or shelved at that time (see UNITED STATES, paragraph Congress) largely shaped the issues of the campaign and furnished effective material for campaign literature and debate. The "imperialistic" issue, for example, received its edge both from the Porto Rican bill, which was passed, and from a government bill for the Philippines, which was not passed. The strictures of

Senator Hoar and other Republicans upon the colonial policy thus formulated were naturally considered by Democrats as proving the paramountcy of that issue, and no after explanations by Republicans could wholly discountenance an issue whose consequence Republicans had insisted upon. Conversely, the currency law of March 14, 1900 (see CURRENCY REFORM) permitted the Republicans to bring forward that subject and keep it prominent and to state to good effect that "the great cause of sound currency was practically defended by the Republican party alone." In this and other matters the desire of both parties to appear at their best in the impending congressional and presidential election necessarily influenced to some extent the proceedings of the Congress. While relatively few of the minor proceedings were, as a matter of fact, much commented upon during the campaign, this, in some cases at least, resulted not from the political insignificance of the subject-matter, but was due to the fact that the action taken thereon had been negative action, not purposed to invite positive criticism or to raise direct fighting issues. (See UNITED STATES, paragraph Army, for example.) When the conventions met then the position of the parties was already fairly well defined.

The Republican convention endorsed, as it was politically bound to do, the record of the administration, and promised a continuance of its domestic and foreign policy with such modifications as future events might show desirable. The real work of the convention was not in drafting a platform, for Republican legislation had been formulating that for many months, but in electing a vice-presidential candidate who would best appeal to every section of the country. Similarly, the platform of the Democratic party was also to a large degree made before the convention met. As the opposition platform it was required to oppose in many essential respects the policy and platform of the Republican party. The most important undetermined question which the Democratic convention had to decide was whether by affirming the gold standard it should win over the Gold Democrats and many of the Independents, or whether by reaffirming free silver it should hold fast to Mr. Bryan and to the Populist and Free Silver parties, which nominated him for the presidency.

The Progress of Campaign Events.—The opening of active campaigning began on July 17, when Governor Roosevelt, in a speech at St. Paul, Minn., condemned the Democratic programme in a sentence which aroused much diverse feeling: "They (the Democrats)," he said, "stand for lawlessness and disorder, for dishonesty and dishonor, for license and disaster at home, and cowardly shrinking from duty abroad." On July 25 the national committee of the Gold Democratic party decided against putting a ticket of their own in the field and also against the proposed plan of organizing a fusion movement with the Anti-Imperialists. On August 7 the fusion, for the purposes of national politics, of the Populist with the Democratic party was made complete by the generous withdrawal of Mr. Charles A. Towne, the Populist nominee for the vice-presidency, in favor of Mr. Adlai E. Stevenson, the Democratic nominee. Mr. Towne stated in his letter of resignation that the nomination of Mr. Stevenson instead of himself as the Democratic vice-presidential candidate "had been made decisively and with absolute fairness." Manifestly, then, it was his duty to support that nomination. "For," said Mr. Towne, "everybody knows that either Mr. Stevenson or Mr. Roosevelt is to be the next Vice-President. . . . In what light should I appear before the American people if, while advocating the election of one ticket, I should be going through the form by running on another?" On August 8 Mr. Bryan informally accepted the nomination to the presidency tendered him by the Democratic party. His speech on this occasion was devoted to an arraignment of the Republican policy of imperialism, and was regarded as the most considerable effort he had ever made, both as concerns manner and subject-matter. The effect of Mr. Bryan's speech was to make Republicans bestir themselves in pushing forward currency as a counter-issue. Apparently, also, President McKinley's letter of acceptance, published on September 10, was intended as a direct answer to Mr. Bryan's arguments. In that letter President McKinley reviewed the entire colonial situation as it had developed during and following the Spanish War, and affirmed that, as shown by the excerpts from official documents and correspondence which he included, no feasible or honorable course had been open to the government other than that which had been followed. On September 12 the New York Democrats nominated Mr. John B. Stanchfield for governor of the State. It was thought by many that if Mr. Bird S. Coler had been nominated for that office, New York would have been likely to throw her electoral vote to Mr. Bryan, but that by nominating Mr. Stanchfield, Democrats had themselves impaired Mr. Bryan's chances of election. On September 18 President McKinley's instructions to the Philippine commission were made public as additional proof that only the good of those islands had been sought by the administration. On September 20 the preliminary report of this commission (see PHILIPPINES, paragraph Philippine Commission) was published, setting forth, as was remarked, that "the islands were doing as well as could be expected," and arguing for their retention on the ground of commercial expediency

and because the insurrection was on its last legs, being kept alive only by the attitude of the Democratic party. On September 17 the great miners' strike in Pennsylvania (*q.v.*) was declared, whereby over one hundred and twenty-five thousand men were thrown out of employment. Democrats were inclined to take this opportunity to point out the sordid and fallacious elements of the Republican "full-dinner-pail" argument, and they hinted, when concessions to the miners were almost immediately made by the operators, that the impending elections rather than an acute sense of justice had prompted the strike's early settlement.

Attitude of the Independents.—As the campaign progressed an increasing number of independent papers, as, for instance, the *New Yorker Staats-Zeitung*, whose position was regarded with especial interest as indicating the turn of the German vote, declared for President McKinley, although they heartily disapproved of his Philippine policy. Many of these papers considered that Mr. Bryan in his later speeches had not kept to the level of his address of August 8, but had appealed, instead, to class feeling. Remarks like the following, which, in effect, Mr. Bryan was reported to have made, tended to antagonize conservative interests: "When I see these pale, tired women on the streets, who are never able to afford a month's outing in the summer at some pleasant watering-place, I wonder how their husbands and brothers can find the heart to vote the Republican ticket!" On October 16 Mr. Bryan as the guest of Mr. Croker in New York City addressed large audiences at Madison Square Garden and elsewhere. At Cooper Union he opened his speech by saying, "Great is Tammany, and Croker is its prophet." This remark, taken in connection with the ovation arranged for him by Tammany Hall, excited comment in many quarters upon the propriety of a presidential nominee accepting the friendship of Tammany, when in his speeches he constantly arraigned trusts and civic dishonor. "It is part of the irony of Mr. Bryan's position," said the *London Times* (October 5), "that while he denounces corruption and the money power he is receiving the support of Tammany, perhaps the most perfect example of organized corruption that the modern world can boast of." And the same editorial continued: "In another direction Mr. Bryan seems to be no less unfortunate. It is hinted that his own party managers would not be altogether sorry to see him defeated. He has involved them in an alliance with Populism, which is very little to their liking, and has for the time being deprived them of their accustomed control of the party." Statements of the same tenor were often made in the United States press toward the end of the campaign. As the time of election drew near it became evident that victory for Mr. Bryan would not necessarily or probably indicate an endorsement by the people of the principle of free silver, for which principle Mr. Bryan stood more than for any other; nor if President McKinley were returned to power would it demonstrate that the people approved of the colonial policy devised and put into effect by the administration. But if President McKinley were elected, it would seem to show that the country declined to approve free silver, radical governmental measures, or unproved executive ability; while if Mr. Bryan were given power, it would be evident that the Philippine and Porto Rican measures were disapproved. As in 1896, much interest was felt in the position taken by prominent Gold Democrats and Independents. With the exception of Senator Wellington, hardly any well-known Republicans went over to Mr. Bryan, though previous Republican criticisms of imperialism served the Democrats nearly as well as recruits. On the other hand, though several men of importance who had supported Mr. McKinley and sound money in the previous campaign announced that they would vote for Mr. Bryan in 1900, yet the larger number of those who had left the Democratic party in 1896 did not return to it. Ex-President Cleveland, though, undoubtedly, urged to do so, would express no opinion on the campaign other than to emphatically endorse his previous utterances against free silver and demagogism. Judge Wheeler H. Peckham probably voiced the opinion of many Cleveland Democrats when he said, "I think . . . that all who opposed Bryan in 1896 and all who recognize the abominable character of his doctrines should now put forth every energy, once and for all, to so overwhelm him that we may have time and ability to address ourselves to the defect of the Republican party without at the same time presenting principles and candidates more objectionable than theirs." Among those who announced their intention of supporting Mr. Bryan, mainly or solely on account of the issue of imperialism, were the Hon. Richard Olney, Carl Schurz, Bourke Cockran, Edward M. Shepard, and ex-Governor Boutwell. Until the campaign was drawing to a close it was quite freely said that "the chief trouble of the Republican managers lay not in the strength of their opponents, but in the apathy of their own supporters." For this it was stated there were two main reasons. In the first place, though business men understood that treasury payments in silver would result disastrously to private and public finances, yet, as shown by stock exchange quotations preceding the election and by the comparative infrequency of "gold and contingency" contracts, this possibility was looked upon as more remote than in 1896. In the second place, the

enthusiasm and popular demonstrations of national campaigns have always been largely inspired by the personality of the presidential nominees irrespective of the policies for which they stood. But in the even temperament of President McKinley there was nothing pronounced, one might almost say flagrant enough, to commend him as a popular idol.

RESULTS OF THE ELECTION.

The following table, showing the results of the presidential election, is compiled from figures given by the *Tribune Almanac* for 1901. The figures used by the *Tribune* are taken because they seem, on the whole, to be the most accurate of any obtainable. Owing to the fact that the figures for election returns are compiled by different methods, it is impossible to give figures which can be vouched for as absolutely reliable. The following table shows the popular and electoral vote for 1896 and also for 1900:

STATES.	POPULAR VOTE.*						ELECTORAL VOTE.			
	1896.			1900.			1896.		1900.	
	Rep.	D.-P.	Nat. D.	Rep.	Dem.	Pro.	McKinley.	Bryan.	McKinley.	Bryan.
Alabama.....	54,737	*131,226	6,463	53,669	96,368	1,407	..	11	..	11
Arkansas.....	37,513	101,103	.....	44,800	81,143	784	..	8	..	8
California.....	146,868	*144,766	2,006	165,846	124,636	5,034	8	1	9	..
Colorado.....	26,371	*161,369	1	98,067	122,733	3,790	..	4	..	4
Connecticut.....	110,326	56,740	4,336	102,572	74,014	1,617	6	..	6	..
Delaware.....	20,453	16,615	966	22,537	18,365	546	3	..	3	..
Florida.....	11,357	*31,958	1,772	7,804	28,261	2,334	..	4	..	4
Georgia.....	60,091	*64,672	2,706	34,028	77,353	1,396	..	13	..	13
Idaho.....	6,314	23,192	.....	27,198	39,414	837	..	3	..	3
Illinois.....	607,130	464,533	6,390	597,855	503,061	17,026	24	..	24	..
Indiana.....	323,754	305,573	2,145	336,063	309,581	13,717	15	..	15	..
Iowa.....	229,233	223,741	4,516	307,778	209,266	9,002	13	..	13	..
Kansas.....	159,541	171,810	1,209	185,952	162,606	3,006	..	10	..	10
Kentucky.....	318,171	317,890	5,114	226,799	234,902	2,333	12	1	..	13
Louisiana.....	22,037	77,175	1,915	13,928	53,671	2,333	..	8	..	8
Maine.....	80,461	34,587	1,866	65,475	36,532	2,586	6	..	6	..
Maryland.....	186,978	104,746	2,507	136,212	123,271	4,582	8	..	8	..
Massachusetts.....	273,976	*105,711	11,749	238,866	156,977	6,302	15	..	15	..
Michigan.....	293,582	237,268	6,368	316,269	211,685	9,916	14	..	14	..
Minnesota.....	193,508	139,736	3,222	188,779	111,816	8,394	9	..	9	..
Mississippi.....	5,123	*63,793	1,071	5,753	61,706	.....	..	9	..	9
Missouri.....	304,940	363,652	2,355	313,733	351,918	5,963	..	17	..	17
Montana.....	10,494	42,537	.....	25,373	37,137	296	..	3	..	3
Nebraska.....	103,064	115,999	2,797	121,835	113,613	3,665	..	8	..	8
Nevada.....	1,923	*3,377	.....	3,349	6,347	.....	..	3	..	3
New Hampshire.....	57,444	*21,650	3,530	54,303	35,480	1,271	4	..	4	..
New Jersey.....	221,367	133,675	6,373	221,707	164,808	7,183	10	..	10	..
New York.....	819,538	551,369	18,950	821,902	678,386	22,043	36	..	36	..
North Carolina.....	153,222	174,488	573	132,997	157,733	900	..	11	..	11
North Dakota.....	26,335	20,636	.....	35,891	20,519	731	3	..	3	..
Ohio.....	535,991	*477,497	1,658	543,918	474,862	10,203	23	..	23	..
Oregon.....	48,779	46,662	977	46,526	38,385	2,536	4	..	4	..
Pennsylvania.....	728,300	433,230	10,921	712,665	424,232	27,908	32	..	32	..
Rhode Island.....	37,437	14,459	1,166	34,784	19,812	1,529	4	..	4	..
South Carolina.....	9,313	58,801	894	3,590	47,236	.....	..	9	..	9
South Dakota.....	41,042	41,325	.....	54,580	39,554	2,564	..	4	..	4
Tennessee.....	148,773	166,268	1,961	123,394	145,744	3,914	..	12	..	12
Texas.....	167,520	370,434	5,046	120,483	267,243	2,644	..	15	..	15
Utah.....	13,491	64,607	21	47,089	44,949	205	..	3	..	3
Vermont.....	50,991	*10,607	1,339	51,127	10,170	1,032	4	..	4	..
Virginia.....	135,388	154,935	2,127	115,687	146,079	2,153	..	12	..	12
Washington.....	89,153	51,646	1,688	57,456	44,905	2,363	..	4	..	4
West Virginia.....	104,414	92,927	677	119,780	99,781	1,585	6	..	6	..
Wisconsin.....	268,135	165,523	4,584	265,866	159,285	10,724	12	..	12	..
Wyoming.....	10,072	10,655	.....	14,482	10,164	.....	..	3	..	3
Totals.....	7,111,607	6,509,052	134,685	7,314,027	6,343,514	206,680	271	176	292	155
Pluralities.....	602,555	.....	.....	871,513	.....	.....	.....	.....	.....	.....

* To the popular vote for 1900, as here given, should be added 33,433 cast for the Social Labor Party, 82,904 for the Social Democratic, and 78,444 scattering.

It will be seen from this table that Mr. McKinley's plurality increased from 602,555 in 1896 to 871,513 in 1900, while his electoral vote increased from 271 to 292. The States which cast their electoral vote for Mr. Bryan in 1896 and for Mr. McKinley in 1900, thus increasing the latter's electoral vote, were Kansas, with 10 electoral votes; Nebraska, with 8; South Dakota, with 4; Utah, with 3; Washington, with 4; and Wyoming, with 3. The only State which voted for Mr. McKinley in 1896 and

for Mr. Bryan in 1900 was Kentucky, which threw 12 electoral votes for Mr. McKinley and 1 for Mr. Bryan in 1896, and in 1900 threw 13 for Mr. Bryan. Owing to local political conditions which obtained in Kentucky in November, it is not clear how much real significance should be given to this fact. If Kentucky, which before 1896 regularly cast a Democratic vote, is considered as part of the solid South, then Mr. Bryan received only 13 electoral votes from all other sources—namely, from Montana, 3; from Idaho, 3; from Nevada, 3, and from Colorado, 4. Hence, only those States voted for Mr. Bryan which were dominated by silver interests or in which sectional prejudices of long standing prevailed. Furthermore, all the great industrial States in which are concentrated by far the greater wealth of the nation voted for Mr. McKinley. On the other hand, it is to be noted that in most of the doubtful States—Connecticut, Delaware, Illinois, Indiana, Maryland, New Jersey, New York, and West Virginia—the Republican plurality fell a total of over 200,000. It is believed that a part of this loss should be ascribed to the fact that while in 1896 the Democratic organization in several of those States was almost totally disorganized by the nomination of Mr. Bryan and the triumph of the Populist-Silver forces in the convention, by 1900 these organizations were again in running order. The States which voted for Mr. Bryan in 1896 and for McKinley in 1900 seem to represent in part the decline of silver interests and in part the subsidence of populism. In view of the popular returns, however, it is a mistake to consider Mr. McKinley's victory as a complete landslide. For while he obtained 65 per cent. of the electoral vote in 1900, as against 61 per cent. in 1896, he received only 52 per cent. of the total popular vote cast, as against 51 per cent. in 1896. Of the votes cast in the Democratic and Republican parties alone, Mr. McKinley received in 1900, 54 per cent. Of the total number of States, the Republicans carried 28 and the Democrats 17. The defeat of Mr. Bryan in Nebraska, his own State, was regarded as significant in view of the fact that Democrats, Populists, and Silver Republicans had formed there a complete fusion. The reduction of Mr. Bryan's plurality in Colorado and his defeat in Kansas should also be noted.

PRESS CLUBS, INTERNATIONAL LEAGUE OF, founded in 1890, had in 1900 a membership of 4000. The tenth annual convention was held July 17-18, 1900, at New York and New Orange, N. J. An offer of a plot of land at New Orange for the proposed Journalists' Home was accepted, the site to be conveyed when the league is ready to build, which must be within three years. The next convention will be held in July, 1901, at San Francisco and Portland, Ore. President, Colonel J. M. Carter, Jr., Baltimore; secretary, C. Frank Rice, Boston Press Club, Boston, Mass.

PREVENTION OF CRUELTY TO ANIMALS, AMERICAN SOCIETY FOR THE, the parent organization of its kind in America, incorporated in 1866, and supported chiefly by voluntary contributions, maintains an extensive humane work. The report of the society for the year 1900 shows 515 arrests and prosecutions, 3835 animals suspended from labor, 3093 horses, mules, and other large animals disabled past recovery humanely destroyed, 92,721 small animals destroyed, 552 disabled horses and other large animals removed from the streets in ambulances, and 56,610 cases investigated. The society distributes humane literature and conducts courses of illustrated lectures in schools and before gatherings of livery men, wagon-drivers, and others. The efforts of the society have also during the year 1900 been directed to the protection of animals in Cuba, Porto Rico, Hawaii, and the Philippines. President, John P. Haines; superintendent, Charles H. Hankinson. Headquarters, Madison Avenue and Twenty-sixth Street, New York City.

PREVENTION OF CRUELTY TO ANIMALS, THE MASSACHUSETTS SOCIETY FOR, incorporated in 1868, had organized up to January 1, 1901, 44,472 "bands of mercy" for the protection of harmless animals. It publishes *Our Dumb Animals*. President, George T. Angell, 19 Milk Street, Boston, Mass.

PREVENTION OF CRUELTY TO CHILDREN, NEW YORK SOCIETY FOR THE, founded in 1874, the parent of many similar societies in the United States and Europe. The twenty-sixth annual report of the society (for the year 1900) shows that since the foundation of the society 138,821 complaints were received, 52,860 cases were prosecuted, 49,330 convictions were secured, and 90,078 children were rescued. In the year 1900 the convictions numbered 1875, and 6092 children were rescued. Headquarters, 297 Fourth Avenue, New York City. President, Vernon M. Davis; secretary and superintendent, E. Fellows Jenkins.

PRIESTLEY, Sir WILLIAM OVEREND, K.B., M.D., member of Parliament and a prominent obstetrician, died in London April 11, 1900. Born near Leeds June 24, 1829, he was educated in Edinburgh, at King's College, London, and in Paris. He settled in London in 1856, and in 1863 became professor of obstetric medicine in King's College. The performance of his duties here, however, was brought to an end by ill health in the following year. He was physician-accoucheur to Princess

Louis of Hesse (Princess Alice) and Princess Christian of Schleswig-Holstein. He was made president of the Obstetrical Society of London, and in 1893, in recognition of his professional eminence, was knighted. From 1896 to the time of his death he represented Edinburgh and St. Andrews universities as a Conservative in Parliament. His publications consist of various articles on medical science and natural history.

PRIME, FREDERICK EDWARD, chief engineer in Grant's Mississippi campaign, died August 12, 1900, at the age of 71. His first service after graduation from West Point in 1850 was on improvements in New York Harbor. At the opening of the Civil War he was assistant engineer engaged in the construction of the defences of Washington. He was commissioned captain of engineers and served in the Manassas campaign, and subsequently was chief engineer of the departments of Kentucky, the Cumberland, and the Ohio. He was breveted lieutenant-colonel for gallantry at Vicksburg, and in 1863 received the promotion of major in the Corps of Engineers.

PRIMITIVE METHODISTS, or RANTERS, organized 1810 in England by seceders from the Wesleyan Church after the failure of their attempt to introduce camp meetings as one of the religious activities of that church. This sect, which is not a branch of American Methodism, was introduced from Canada into the United States and became principally localized at Fall River, Mass., the present headquarters. According to the last reports, the church had 65 ministers, 92 churches, and 6470 members.

PRINCE EDWARD ISLAND, a province of the Dominion of Canada, with an area of 2000 square miles and a population of (1891) 109,078. Capital, Charlottetown, with a population estimated in 1900 at 12,000. The government of the province is administered by a lieutenant-governor and Executive Council. There is a Legislative Assembly of 30 members elected on manhood suffrage, and the province sends 4 members to the Dominion Senate and 5 to the House of Commons.

Fisheries.—The official returns for the calendar year 1898 (the last officially reported) give the total value of the catch at \$1,070,206, against \$954,949 in the previous year. The principal catches were lobsters, \$468,374; herring, \$182,214; oysters, \$105,936, and cod, \$101,488. The total value of fish exported in 1899 was \$536,424. There were in 1898, 230 lobster canneries employing 3120 men. The total amount of capital invested in the fishery industry was estimated at \$419,906.

Commerce and Banks.—The total value of imports for the fiscal year 1899 was \$465,243, a slight decline from the previous year. Of the total amount, \$184,350 came from the United States and \$247,022 from Great Britain. Duty collected, \$127,311. Exports, domestic and foreign, amounted to \$1,289,659. The number of failures for the calendar year 1900 was 8, with \$87,326 liabilities and \$28,300 assets. The registered merchant marine comprised 20 steamers and 151 sailing vessels, with a total net tonnage of 14,660. There were at the end of the fiscal year 1899, 6 chartered banks and bank branches, and 9 post-office savings banks with 1276 depositors and \$288,102 deposits. The government savings bank had 5327 depositors and deposits amounting to \$1,800,667.

Railways and Post-Offices.—The railways of the province, which are owned and operated by the government, had a total length of 211 miles at the end of the fiscal year 1900. The total receipts for the same year amounted to \$174,738, and the cost of operating, \$220,931, leaving a deficit of \$46,193 against \$53,041 in the previous year. A branch line 75 miles long is to be constructed in the Murray Harbor district. The line is to be used mainly for the shipping of produce to the iron mines of Sydney, Nova Scotia, and to Boston. The number of post-offices in 1899 was 409, and the number of letters posted, 1,450,000. The 18 money-order offices issued 9220 orders, representing \$131,913.

Education.—The school system is under the control of a Board of Education and a chief superintendent. The schools are maintained partly by government grants and partly by district assessments. The statistics for the year ending June 30, 1899, give the number of public schools at 468, with an enrolment of 21,550 and an average daily attendance of 12,941. The total amount expended on education during the year was \$157,068, of which \$125,531 was contributed by the government.

Finances.—The total revenue of the province for the fiscal year 1899 amounted to \$282,678. The main source of revenue was the Dominion subsidy, \$181,932. The expenditures for the same year amounted to \$276,789. The principal item of expenditure was education, \$125,531. The gross debt of the province was \$500,689.

PRINCETON UNIVERSITY, at Princeton, N. J., founded 1746. In 1899-1900 the faculty numbered about 100 and the student body, 1277, of whom 109 were graduate students, 749 academic undergraduates, 7 in the electrical school, and 412 scientific undergraduates. The income for the academic year amounted to about \$275,000, the present endowment of the university now being about \$2,500,000. The central library collection occupies the Chancellor Green library building, which has

been newly refitted and is connected with the new library building. The library includes 144,600 volumes and about 40,000 pamphlets. The two literary societies, Whig and Cliosophic, have catalogued libraries of 10,000 volumes each, and the religious society, the Philadelphian, one of 1000 volumes. The Princeton Theological Seminary library, which contains 64,500 volumes, is open for consultation and loan of books to university students on certain days of the week. New academic freshman entrance requirements have been adopted at Princeton in accordance with recommendations of the National Educational Association and of the College Entrance Examination Board of the Middle States and Maryland. These requirements are to go into effect in 1903. The minimum requirements which are expected of all candidates for the academic department include branches in English, ancient history, Latin grammar and composition, *Cæsar*, *Cicero*, *Virgil*, and *Sallust*, Greek grammar and composition, *Xenophon*, and *Homer*, French or German, algebra, and plane geometry. Candidates who pass in certain other branches may obtain advanced standing in one or all of the subjects of instruction of the freshman year. The requirements for advanced standing in each department are: In Latin, certain parts of one or more of the following subjects: *Ovid*, *Virgil*, *Cicero*, composition, and sight translation; in Greek, selected portions of *Homer*, *Herodotus*, composition, and sight translation; in French or German, certain works for translation, and in mathematics, algebra, and solid and plane geometry. One of the most interesting features of these new requirements is the fact that a new student may, by additional preparation before entrance, anticipate the work of his freshman year and take his B.A. degree in three years. In matters affecting the curriculum at Princeton there is nothing to be stated for the year 1899-1900 except that a committee is keeping in touch with the changes being made in other institutions, and will be ready to act when the proper time comes. Professor Andrew F. West has been appointed dean of the graduate school.

PRISON ASSOCIATION, NATIONAL, was organized in Cincinnati in 1870 to influence the improvement of penal laws and institutions and to care for discharged prisoners. The association meets annually, and its proceedings form a valuable contribution to penological science. The secretary is Rev. J. L. Milligan, chaplain Western Pennsylvania Penitentiary, Allegheny, Penn.

PROTECTIVE TARIFF LEAGUE, AMERICAN, organized in 1895. In 1899 it had 963 members. Secretary, Wilbur F. Wakeman, 135 East Twenty-third Street, New York City. The general meeting is held on the second Thursday of January of each year at New York City.

PROTESTANT EPISCOPAL CHURCH, a member of the Anglican communion, traces its descent to the Church of England through colonial churches, which became definitely organized as an independent branch in 1785-89. It now consists of 59 dioceses and 17 missionary jurisdictions, using the same liturgy and governed by canons enacted by the general convention, which meets triennially and convenes its next session at San Francisco in October, 1901. According to its latest statistics, the Episcopal Church has 89 bishops, 3 of whom were elected in 1900; 4822 clergymen, and 5553 church edifices; it is divided into 6394 parishes and missions, embracing 708,199 communicants, whose contributions during the past year amounted to \$16,023,417. These figures indicate uniform progress over the year 1899, and represent a substantial growth for the last decade. The activity of the church is shown by its many institutions, which successfully administer their offices to the diffusion of Christianity and the advancement of denominational power. A topic of great interest to the church during the past year has been the suspension of grants to certain dioceses by the board of missions, an act which has aroused much discussion and indicates the necessity of readjustment in this department; but an event that attracted general notice was the consecration of Rt. Rev. Reginald Heber as bishop coadjutor of Fond du Lac. Two Catholic bishops, one the head of the Polish Catholic denomination, the other a bishop of the Greek Catholic Church, were present at the ceremony, which surpassed in its excessive splendor of ritual anything experienced in the Anglican communion since the Reformation. The episode has excited various comments—by scoffers it has been termed the "Fond du Lac circus;" by churchmen, ritualistic anarchy, and by some it has been received as an evidence of the tendency to closer fraternity between the Protestant Episcopal and Greek Catholic churches. The church in China apparently has continued its work, in spite of suffering on the part of native Christians, attendant on the anti-foreign riots. A loss of three bishops has been sustained in the deaths of Mahlon N. Gilbert, bishop coadjutor of Minnesota; Henry M. Jackson, bishop coadjutor of Alabama, and Richard H. Wilmer, bishop of Alabama.

PRYOR, Colonel LUKE, formerly United States senator from Alabama, who died August 5, 1900, at the age of 80, was for fifty years the most influential lawyer of North Alabama. After the Civil War he was a formidable leader in terminating

carpet-bag rule, and in 1879 was appointed United States senator to fill the unexpired term of George S. Houston. He afterward declined an election to the office. He was in Congress one term, and several times represented Limestone County in the Legislature.

PSYCHICAL INSTITUTE, INTERNATIONAL SOCIETY OF THE, was founded in 1900 in Paris for the purpose of collecting all books, apparatus, etc., relating to psychical science, supplying aid to laboratories and investigators, organizing lectures and courses of instruction, establishing permanent laboratories and a clinic, where researches may be pursued by members, and publishing the *Annales de l'Institut Psychique International de Paris*, which will comprise a summary of the work done by members.

PSYCHICAL RESEARCH SOCIETY FOR, founded in England in 1882 for the study of mental and physical phenomena not included in the observation and experiment of the physical and psychological laboratories. The president for 1900 was Frederick W. H. Myers, and the list of vice-presidents included A. J. Balfour, Sir William Crookes, Lord Rayleigh, Professor James of Harvard University, Professor S. P. Langley of the Smithsonian Institution, and Professor J. H. Hyslop of Columbia University. The number of members in 1900 was as follows: Five honorary members, 25 corresponding members, 30 honorary associates, and 863 members and associates. There is an American branch with 463 members, of which Dr. Richard Hodgson is the secretary. The society publishes *Proceedings* and a monthly *Journal*, the latter being for private circulation. A continuation of Professor W. F. Barrett's research on the divining-rod, the first instalment of which was published in 1897, forms Part XXXVIII. of the *Proceedings*, and appeared in October, 1900. The present state of knowledge concerning the divining-rod is summed up by Professor Barrett as follows: "For some centuries past certain individuals, locally known as dowzers, have declared that they can discover the presence of underground water, mineral lodes, coal, building stone, or other buried objects which may be sought for by the apparently spontaneous motion of the so-called divining-rod. When their pretensions have been tested, the result, though by no means uniformly in their favor, has been so remarkable that chance coincidence appears a wholly inadequate explanation. Any explanation based upon trickery or unconscious hints from bystanders, or the detection of faint surface indications of the concealed object, or other known cause is insufficient to cover all facts. The movement of the rod or forked twig is only a special case of motor automatism exhibited by a large number of individuals, and arises from a subconscious and involuntary 'suggestion' impressed on the mind of the dowser. Accompanying the involuntary and usually unconscious muscular contraction which causes the motion of the forked twig or rod, many dowzers experience a peculiar *malaise* and some a violent convulsive spasm. This is a psycho-physiological effect, akin to emotion. Moreover, the state of mono-ideism of the dowser creates a condition of partial catalepsy, when some suggestion causes the idea to culminate. This subconscious suggestion may arise from a variety of causes; sometimes it is merely an auto-suggestion, at others it is unconsciously derived through the senses from the environment, but in a certain number of those who exhibit motor automatism the suggestion appears to be due to some kind of transcendental perceptive power. Such persons appear only able to exercise this transcendental faculty when their normal self-consciousness is more or less in abeyance or when it is completely submerged, as in profound hypnosis. This subconscious perceptive power, commonly called 'clairvoyance,' may provisionally be taken as the explanation of those successes of the dowser which are inexplicable on any grounds at present known to science."

PSYCHOLOGICAL ASSOCIATION, AMERICAN, a society of psychologists, founded in 1892, had in 1900 a membership of 127. President, 1900, Professor Joseph Jastrow of the University of Wisconsin; secretary, Dr. Livingston Farrand of Columbia. The meeting for 1900 was held at Baltimore in conjunction with the American Society of Naturalists on December 27 and 28. Professor Josiah Royce was elected president for the year 1901, and Chicago was appointed as the place for the meeting to be held in December, 1901.

PSYCHOLOGY. The fourth international congress of psychology was held at the Exposition at Paris, August 20-26, 1900, at the Palais des Congrès. It was conducted in the following sections: 1. Psychology in Relation to Anatomy and Physiology. 2. Introspective Psychology and its Relation to Philosophy. 3. Experimental Psychology and Psychophysics. 4. Pathological Psychology and Psychiatry. 5. Hypnotism, Suggestion, and Cognate Subjects. 6. Social and Criminal Psychology. 7. Comparative Psychology. It may here be noted that psychical research was given recognition as part of psychology for the first time in an international congress of psychology. The session was opened by the papers of Professor Ribot, president

of the congress, and Professor Ebbinghaus, showing the progress of psychology. Nearly one hundred papers were presented, covering all the departments of psychology, with the notable exception of the subject of animal psychology. Only a small proportion of ethnic psychology was represented, in spite of the fact that the year 1900 is marked in psychological annals by the publication of the first volume of Wundt's *Völkerpsychologie*. Among the papers of the experimental section were reports of N. Vaschide on muscular and tactile sensibility; by S. Alrutz on temperature sensations; of Dr. P. Mentz on the comparative saturation of the various parts of the spectrum; of Professor Stratton on the *minimum visibile* (see PSYCHOLOGY, EXPERIMENTAL, paragraph University of California); of L. Marillier and Dr. Philippe on new æsthesiometric measurements; of Professor Monroe on olfactory images in dreams; of Professor Tarkhanoff on the hallucinations of etherized frogs, and of Mademoiselle Jotekyo on fatigue. Among the papers in the section of Child Psychology were those of Professor Bryan on the new arithmetical prodigy, Arthur F. Griffith; of the Misses Paget and Anstruther-Thomson on the motor element in the æsthetics of vision; a report of N. Vaschide on the constructive imagination of children, and of Professor Netchaëff on the development of memory among school children.

Twelve papers were read in the experimental section. Dr. B. R. Aars had a paper on certain conditions of the rivalry of the retinal images, in which he urged that the alternation of retinal images was due not alone to physiological conditions, but also to causes in the brain itself, such as are found in the attention or will. Contrast and clearness of outline were shown to be of greater importance than the intensity of the sensation. Dr. F. Kruger, in a paper on consonance and dissonance, described experiments which showed the inadequacy of Helmholtz's theory that consonance is due to the coincidence of overtones or harmonic tones, and that dissonance is due to their divergence. He pointed out that both consonance and dissonance are observed in tones that have no harmonics. Professor Külpe, in his paper on the relation of just perceptible differences and clearly perceptible differences, described experiments made with visual and auditory stimuli which showed that the clearly perceptible differences were not uniform, as has hitherto been taken for granted, and that the amplitude of just perceptible differences increases with the absolute intensity of the sensation. The so-called Weber's law is thus shown to have a different meaning when applied to just perceptible differences from that which it has when applied to clearly perceptible differences of sensation. He concludes that Weber's law should be confined to sensations at the threshold. Professor Alfred Lehmann, of Copenhagen, read a paper on the mechanical equivalent of psychic states, describing experiments which led to the belief that the physical equivalent of mental states can be measured by the ergograph. N. Vaschide reported a research on the relations between tactual and muscular sensibility, showing the independence of the two. Muscular sensibility is shown to be a perception of the movements made by the muscles and to contain no element of the so-called sense of innervation. This is proved by the fact that cutting the nerves that go from the skin to the brain or anæsthetizing the skin itself does not affect the muscular sense as exhibited in the execution of voluntary movements. Anæsthesia of the mucous membrane of the vocal cords does not interfere with correct intonation in singing. He reports the existence of an electromuscular sense and of muscular after-images. In the fourth section of the congress Professor Sokolov read a paper, entitled *Individuation Colorée* (see article SYNÆSTHESIA); Professor Charles Richet exhibited a child of 3 years, who is the most remarkable musical prodigy that has yet appeared. Mademoiselle Marie Bœuf presented a paper on the psychological theory of time, in which she argues that there is a sense of time, which is the result of nerve rhythm. The rhythm sensation is found in all animals, but in its highest development in man. The rhythm is exhibited in the attention and its fluctuations. The rate of the nervous undulation varies, according to the state of the emotions and other conditions, such as nervous disorders and intoxication. The sense of rhythm gives a feeling of presence to all the events of life, so that each event has while it persists in the memory a distinct time feeling. The past feeling and the future feeling under certain circumstances become confused, resulting in a time illusion.

The fifth international congress of psychology was appointed to be held at Rome, Italy, in 1904 under the presidency of Professor Sergi.

An interesting contribution to general psychology was made by Mr. Maurice H. Small in his study on *Some Relations of Society and Solitude* (Pedagogical Seminary, April, 1900). After showing the social tendency in its primary form among animals of different position in the biologic scale, he examined the character and environment of five hundred of the great men and characters of fiction of solitary temperament. Two types of character are observed to tend toward solitude—the intensely subjective, which lacks physical or moral force, and the intensely bold, that fights life's battles alone. He finds that "the tendency toward a life of

complete isolation is directly proportional to the intensity and uncontrolled activity in the individual of the impulse to magnify or worship self; inversely proportional to the number and breadth of the interests which the individual recognizes as common to himself and society; inversely proportional to the clearness with which the individual perceives the reciprocity of his relations to society, and directly proportional to the remoteness of matters of common social interest from the immediate personal desires or necessities of the individual. The development of the feeling of solitude and the effects of different degrees of solitude are shown in statements of solitary characters and by evidence from records of solitary confinement—for example, the mutineers of the ship *Bounty*, the wild white man of Tasmania, *Le Sauvage du Var*, Caspar Hauser, and a number of feral men; and the conclusion is drawn that solitary life tends to make the organism purely vegetative, though this depends upon the motives leading to the adoption of the solitary life. From the cell aggregations of the lowest biologic forms, the pets of solitaires, their imaginary companionship, and their mental and physical activities, artistic and literary productions, the need of companionship is shown.

PSYCHOLOGY, EXPERIMENTAL, a branch of what was formerly called mental science, comprising the study and description of states of consciousness. The term mental science is frequently used as equivalent to psychology, particularly in places where experimental psychology has not yet had much development, and sometimes it is made to include logic and ethics. There are few phases of mental phenomena that are not under investigation in some of the many laboratories of experimental psychology in Germany, France, England, and the United States, and the results of these investigations are of practical value in life. From France come reports of experiments on the sense of smell by Toulouse and Vaschide, and upon the attention by Binet. Toulouse and Vaschide endeavored to find out whether the sensation of smell is sharper in one nostril than in the other. The subjects were patients in hospitals and school children in Villejuif. The stimulus or object smelt was camphor dissolved in water in the proportions 0.001, 0.0001, 0.00001, etc. The subject, blindfolded, was given one of the weaker solutions to smell, and then gradually stronger ones, until a sensation of smell was perceived. One nostril was stopped and a record was made only of the strength of solution necessary to produce sensation of smell. The subjects, as a rule, smelt nothing at first, then said they perceived a sensation of smell of an indefinite kind, and finally recognized that it was camphor. One nostril generally proved more sensitive than the other and in the majority of cases the left was the more sensitive. This inequality was found not only among persons of both sexes, but among children as well as adults. The superiority of the left nostril was observed in 42 out of 50 individuals. This may possibly be attributed to the fact that while the nerves of sight, hearing, and touch cross from the right side of the body to the left side of the brain and *vice versa* (so that most persons have more finely developed right bodies and left brains), all or many of the nerves from the nose to the brain go direct without crossing. A further fact, in accordance with this statement, is that the right half of the nose is more sensitive to touch.

From Germany come reports of an elaborate series of experiments on the memory, by Professor G. E. Müller and A. Pilzecker, *Experimentelle Beiträge zur Lehre vom Gedächtniss* (*Experimental Contributions to the Study of the Memory*, Leipzig). In Professor Müller's laboratory in Göttingen, besides the above-mentioned work on memory, a study of the psychology of memorizing was completed by Lottie Steffens. A number of persons carried out for her a set of experiments relative to the best manner of learning by heart a given selection of poetry. Her first experiments were for the purpose of ascertaining what manner, if any particular one, was followed by people generally in learning a number of verses. These observations showed that the manner usually adopted was to read the first few lines over two or three times, then the next few lines, taking thus two or three at a time, reading each over several times, and finally, perhaps, reading the whole thing through without break, from beginning to end. An examination of the results of these preliminary experiments shows that most persons in learning nine lines would read them over about nine times irregularly. The subjects of this research were afterward requested to read the whole number of lines, and then the whole again, not going over any part of them separately. The time consumed in learning a number of lines in the natural manner (that is, piecemeal) was compared with the time consumed in learning, as a whole, the same number of lines of equally difficult matter, and it was found that this new method reduced the time of learning in every case. This is explained by the consideration that the parts are more firmly associated when the piece is read as a whole. This firmness of association is caused both by the repeated reinforcing of the legitimately associated ideas in the verses, but it prevents the irrelevant associations which are a feature of the piecemeal manner of learning. Further experiments upon the two ways of learning nonsense showed the superiority

of learning the given task as a whole. (*Experimentelle Beiträge zur Lehre vom Oekonomischen Lernen; Zeitschrift für Psychologie, etc.*, Vol. 22.)

The work accomplished in the different laboratories of the United States during the year 1900 will be found outlined below under the titles of the various universities which support them. The work of the year has not been as great or as comprehensive as in some previous years, but certain very interesting and practical topics have been elucidated. Professor Thorndike's experiments on fatigue, and Dr. Bawden's investigation on slips of tongue and pen (see paragraph Columbia University), and Dr. Whipple's researches dealing with two remarkable cases of colored hearing (see the article *SYNÆSTHESIA*, also paragraph Cornell University in this article), are examples of such work. Professor Thorndike and Dr. Woodworth, after making careful experiments on the relation of special skill and general ability, find that change in the time or the precision or the quality of any of the particular reactions of the nervous system "needs not and often does not influence appreciably other reactions similar enough to be called by the same name."

Clark University.—As an example of the *questionnaire* method in psychological research, the following set of questions, which was formulated and distributed by F. H. Saunders and G. Stanley Hall, the president of Clark University, will show the nature and extent of this form of investigation. The answers to this set of questions, which were studied for their bearing upon the emotion of pity, numbered about four hundred, and came from persons of all ages and degrees of culture, from students in a normal school to university professors, the average age being about thirty. The *questionnaire* called for concrete, definite and detailed accounts of experiences, where pity has been particularly and exceptionally acute, with all circumstances, symptoms, after effects, etc.

The results of an elaborate study of the answers to the questions show that poverty, hunger, cold, lack of shelter, vice, crime, and various forms of moral and physical weakness exercise great power for pathos; and that pity is commonly felt, particularly among young persons for animals and plants. The replies concerning the most pathetic sounds show that inarticulate cries have more power to call forth strong emotion than words. Music and poetry are both mentioned as strongly pathogenic, but the combination of them in song is still more so. The use of nails in the Crucifixion has, with many of the persons who answered these questions, a peculiar fascination, which seems to indicate a morbid tendency. This research amply demonstrates the highly complex nature of the emotion, sometimes the emotion having in it really less of the element of pure pity, which implies a certain superiority in the pitier, than of that pathos which is confessed to be akin to humor, or of the wider and more comprehensive feeling of *Weltschmerz*. Certain conclusions with a bearing upon education are drawn, as, for instance, that the capacity for pity may be enlarged by training, and that it is important that the impulse to perform charitable acts toward the objects of pity be not inhibited. It is shown that the capacity for pity has something like a constant and limited measure, and that when one has acted upon an impulse to relieve some one kind of suffering, misery of other kinds has less effect upon the emotions. It is demonstrated that imagination is necessary to evoke feelings of pity at the suffering of other persons. The physiological symptoms of pity are shown in the following order of frequency: Effect upon appetite, upon sleep, general depression or sadness, effect on respiration, sobbing, lump in throat, pulse affected, paleness, tears, indigestion, chills, heartache, etc.

Columbia University.—Dr. Edward Thorndike, of Teachers College, reports experiments upon the nature of mental fatigue, which have a practical bearing upon educational problems. His conclusions with regard to the mental incompetency in psychical fatigue are stated by him as follows: "First, that the fact of incompetency is not what it has been supposed to be. Second, that there is no pure feeling of incompetency which parallels it and is its sign; that, consequently, the mental states ordinarily designated by the phrases mentioned are not states made up of such a feeling of incompetency, but are very complex affairs. Third, that these mental states are in no sense parallels or measures of the decrease in ability to do mental work." His experiments were first upon himself and three other persons, and afterward upon school children in Scranton, Penn., and Cleveland, O. The first set of experiments upon himself and three others consisted of examples in mathematics (addition and multiplication), done at different times in the day, first after good sleep and a small amount of mental work, and then other examples after from seven to twelve hours of mental work. It was found that the work done at the close of a long period of hard mental work was of just as good quality as that done while the mind was fresh, and, in several of the experiments, the quality of the work done after long periods of work was better. From introspective observation he is led to the belief that mental fatigue is partly incompetency and partly distaste, and that the distaste comes first, and has in previous investigations been largely confused with the

incompetency. Dr. Thorndike's second set of experiments, those on the school children in Scranton and Cleveland, were eight tests, as follows: Given at the beginning and at the end of the school day and carefully conducted in such a manner as to exclude, as far as possible, all perturbing factors, such as practice, difference, and suggestion. Test 1 was multiplying two numbers each of four digits. More examples were given than could be finished in the time given, so that a measure might be made of the amount of ground covered. Test 2 was the marking of misspelled words in a printed paper containing 32 lines of an account of an elephant hunt. Test 3 was the writing from memory of two sets of ten figures each, which had previously been exhibited for ten seconds. The fourth test required the reproduction of five nonsense syllables. The fifth, the drawing of six figures, each composed of a few simple lines. The sixth was the writing, from memory, of ten numbers as in the third. The seventh was the writing, from memory, of ten letters exposed for ten seconds, and the eighth test was the counting of the number of dots on a chart, which was exposed for five seconds. The examination of the results of these tests was very thorough, and the results substantiate Dr. Thorndike's thesis, that the school children can do as good mental work at the end as at the beginning of the school day. He points out that this fact does not prove that children should or should not have longer periods for rest or a less crowded curriculum, and adds that the poor quality of work done by scholars is due not to the inability of the children, but to their lack of interest, which is allowed to flag in these late minutes of the school day. A third set of experiments was conducted by Dr. Thorndike on the subject of fatigue of special functions. In the first of these experiments, "the mental work done was to mark every word containing both E and T in 151 pages of a book, each page containing about 725 words of text. At the end of each minute a signal was given by a bell, and the subject made a mark, denoting the point he had reached. The work continued eight hours (from 10.15 A.M. to 6.20 P.M.), with only five interruptions, amounting in all to less than nine minutes." The results of this experiment showed that there was a difference of only nine-tenths of 1 per cent. between the number of words correctly marked in the first 25 minutes and that in the last 25 minutes. In the second experiment, the same subject worked four hours, with no inability to work apparent. In the third experiment, which consisted of judging the areas of small parallelograms of paper, and lasted three hours, the same subject's accuracy was 7 per cent. worse in the last hour than in the first. In the fourth experiment the same subject recorded the time required to correct each one of 70 examination papers, working without intermission for six and a half hours, and manifested no decrease of ability due to fatigue; and in the fifth experiment, the same person recorded the time it took him to make cards for a bibliography for three hours, still showing no effect of fatigue. Dr. Thorndike finally conducted a series of experiments, the results of which showed that mental work effected no decided decrease of physical power, from which he concludes, that "the difference between a mind before and after it has worked for six or eight hours cannot be detected by a record of physical work."

Cornell University.—The equipment of the laboratory of experimental psychology at Cornell University was increased in 1900 by the addition of a glass harmonica, several electric forks, a speech recorder, and a very complete outfit for the investigation of the sense of smell. Among the investigations completed or published in 1900 were those on the apperception of the spoken sentence by W. Chandler Bagley, experiments on the control of the reflex wink by George E. Partridge, and two cases of synæsthesia by G. C. Whipple. Dr. Bagley's investigation upon the apperception of the spoken sentence considered the following problems: (1) "What is the effect of context upon the perception of auditory symbols?" (2) How are the objective elements of auditory symbolic perception related to one another? (3) What are the conscious processes involved in the apperception of the spoken sentence?" The method and apparatus used were as follows: The words were pronounced with care before a phonograph, which was used in all the experiments, for the purpose of making the conditions as uniform as possible. Words were given by this means to the subject, first without context and later with context. The words were mutilated by the omission of a consonant in one of three different positions in the word. The conditions of the experiment were in this respect therefore ninefold, viz.: a consonant might be omitted from the beginning, the middle or from the end of a word; and when the word was given in context, or with other words, the mutilated word might be the first word in the sentence or the last word, or it might be in the middle of the sentence. The sentences were short, as in the following examples:

"As a companion he was extremely a(m)iable."

"It was a mystery that none of us could unra(v)el," etc.

In the series from which these are taken the consonant from the middle of the last word of the sentence is dropped and the entire list contains 183 sentences, thus mutilated. The thoroughness of the work may be judged from the fact that sen-

tences were made which not only included mutilations of the nine types above mentioned, but this mutilation was so arranged that every one of the 23 consonant sounds were in turn used with every one of the vowel sounds in the English language. Interesting relations were discovered between the mutilated word, its context, and its place in the sentence. It was found that the same mutilated word was correctly perceived nearly twice as often (82 per cent.) when it was given with a minimum of context (i.e., one or two other words) as when it was given alone. (*American Journal of Psychology*, Vol. XII., No. 1, October, 1900.)

Harvard University.—Research was carried on in the laboratory of psychology by nineteen investigators in fourteen topics of human and animal psychology, viz.: memory, habit formation, and reaction time, fusion of touch sensations in the hand, certain facts of rhythmic appearance, and disappearance of the image in color perception by limited portions of the retina, the factor of direct presentation of objects and its value relative to visual and verbal factors in associative memory, an inquiry as to certain substitutional factors in our judgment of number, when a varied visual content is perceived, the comparison of tactual distances and certain illusions therein which have been compared with those of visual distances, the relation of voluntary effort to the inhibition and control of the course of mental images, two investigations in poetic rhythm and two on certain aspects of the rate and complication of voluntary motor processes with reference to their form and accuracy. The equipment has been increased by many pieces of apparatus designed and made in the laboratory, among them being an apparatus for color-work, consisting of foreground and background screens, the former pierced by an aperture, controlled by shutters, instantly adjustable to any desired magnitude or shape, and with adjustable illumination chambers provided with filtration screens for spectral colors; and an ingenious mechanism for work on fusion of touch, by which the simultaneity and duration, as well as the number and intensity of contacts and their local arrangement, can be nicely applied and controlled. Research work on animal psychology is carried on in three rooms devoted to the study, the material consisting of frogs, turtles, crayfish, newts, and infusoriae. Three problems in animal psychology are under investigation: "(1) To determine to what extent, with what rapidity, and precisely how, animals learn, (2) to test the permanency of any associations formed and (3) to make as many supplementary observations on the general habits and reactions of the animals used as possible." The method used is to place the animal investigated in the centre of a labyrinth, and record the time taken for it to get out as well as in the path travelled. Turtles were found to have a memory for the path travelled in escaping almost as good as dogs or cats. Frogs show the formation of a habit or memory after a single experience.

University of California.—Two researches carried on in the laboratory of the University of California were published in 1900, one by the director of the laboratory, Professor G. M. Stratton, and the other by Mr. Knight Dunlap. The former investigated the so-called "minimum visible," or the question concerning the angular distance of two lines—viz.: how far apart must two parallel lines be to be seen as two lines. It is evident that if they are close enough together they may be fused in sensation and be seen as one line, just as it has been observed that two needle points placed in contact with the skin are perceived as one point though they may be (for some parts of the body) as far apart as three inches. The angular distance is spoken of and not the actual distance, as it is evident that nearer the eye two objects can be distinguished while the same two objects at a greater distance from the eye, even though they are the same distance apart, would subtend a smaller angle and would be seen as one. The eye has been thought to perceive the difference of two vertical lines at an angular distance of from $50'$ to $60'$. This result was reached by experiments with two parallel lines side by side. Professor Stratton by a new method of investigation finds that the smallest angular visible distance of two parallel lines is about $7'$ of arc. He places two vertical lines end to end so that they form one straight line. By moving one of them laterally, yet keeping them both vertical until they are seen to be two lines, he finds that the average observer will perceive that the straight line has become broken when the lines are $7'$ of arc apart. The actual measurements of the lines used by him are as follows: The observer was 120 meters (383 feet) away from the lines, which were strips of white each 50 centimeters ($19\frac{1}{2}$ inches) long and 8 millimeters ($\frac{1}{3}$ inch) wide. An interesting fact in connection with the result of this experiment is noted—viz.: that a distance of $7'$ of arc is, when measured on the retina of the eye, smaller than (less than a quarter of) the actual distance between the rows of cones in the fovea or that part of the retina which has the finest discriminative ability. Professor Stratton points out also that the experiment seems to contradict the generally accepted explanation of the third dimension effect in stereoscopic pictures, which has been accounted for as the result of subconscious suggestion. The experiments of Mr. Knight Dunlap on the "effect of imperceptible shadows on the judgment of distance" were carried on partially by means of the

so-called Muller-Lyer figure, an optical illusion in which the distance between two points is thought to be different from an equal distance between two other points on account of the placing of angles at the points. When the angles point out the space seems smaller; when they point in, larger. It was found that the judgment of the two equal distances between three points on a straight line was affected even if the angles of the Muller-Lyer device were made by shadows, when the shadows alone were so faint as to be imperceptible. This experiment tends to corroborate the supposition that judgment is influenced by factors which are themselves imperceptible, or, stated in other words, many impressions are received by the brain of which the mind is never conscious, which at the same time produce a real difference in perception.

University of Chicago.—The following important investigations were carried on during 1900 in the University of Chicago: (1) In the psychical development of children in the university elementary school and in the physiological school for defectives; (2) in the determination of psychic norms in adult men and women—e.g., sensory, motor, and affective; (3) in the effects upon color sensation of various conditions of fatigue; (4) in the so-called "flicker" method in its application to the facts of color saturation; (5) in the principles of monaural localization of sound; (6) in the comparison of visual and dermal linear space; (7) in the elementary factors in the psychic life of rabbits, and, in connection with the department of sociology, (8) in the investigation of mental conditions among the criminal classes of large American prisons and reformatories.

University of Michigan.—In the laboratory of psychology at the University of Michigan Mr. J. W. Slaughter completed an investigation on attention waves, showing that the fluctuations observed in very faint sensations are correlated ordinarily with the Traube-Hering waves of blood pressure, although in different individuals and in the same individual at different times they may be simultaneous with the breathing wave or with some longer vaso-motor wave. The research of Mr. R. W. Taylor upon the attention wave showed that stimuli have a definite influence on the length or rapidity of the waves. Muscular effort was found to have an effect upon the efficiency of attention.

University of Minnesota.—The director of the psychological laboratory at this university, Professor Harlow Gale, published in 1900 a volume of psychological studies, the results of some years of research. It contains in addition to a study on the nervous system an investigation in the psychology of advertising which developed the curious facts that the right side of the page of advertising attracted less attention than the left, and that the upper part is better for an advertisement than the lower part, and a study of "The Vocabularies of Three Children in One Family to Two and a Half Years of Age." His observations lead to the conclusion that the average two-year-old child uses about seven hundred words, and at the age of two and a half this number is doubled; that on any given day a child will use from 50 to 65 per cent. of its entire vocabulary, and the total number of words spoken will amount to between five and ten thousand, including repetitions; and that there is a remarkable difference in the words used by the children in the same family, less than half the words enumerated by Professor Gale being common to the three children studied. It is inferred from the large number of words used by these children that the estimate made by philologists of the number of words used by adults is too small. The volume contains also a paper on "Taste and Smell in Articles of Diet," showing that smell is the important sense, and that taste is much influenced by suggestion, a description of "A Case of an Alleged Loss of Personal Identity," and an article on "Psychical Research in American Universities."

Wellesley College.—In the psychological laboratory of Wellesley College Professor Mary Whiton Calkins conducted some experiments in the field of aesthetics, having as subjects three hundred children of different ages in the schools of Massachusetts and a hundred and fifty Wellesley College students, half of whom were freshmen and half seniors. Three "half length" pictures of different women by three different artists were shown. One was in color, another a photograph, and the third, a photograph, was chosen for its associative power, being religious in tone. The first and second were shown to each subject individually, who was asked to state which she liked better, this choice being finally compared with the third picture and a second preference recorded. The results of the first choice were that nearly nine-tenths of all the school children, one-half of the freshmen and nearly two-fifths of the seniors at Wellesley preferred the colored picture, while the third picture was found to be the choice of the greater number of subjects. The pictures were shown a second time to the same subjects, who were then asked to give the reasons for their preference. Other problems studied at Wellesley during the year 1900 were as follows: 1. The effect of suggestion on the binaural localization of sound. 2. The effect of the terms of sound localization—visual, tactual, or verbal—upon the direction and degree of the errors. 3. The question as to whether sounds have or

have not a distance mark apart from difference of intensity. 4. The existence of the smell memory image and the possibility of cultivating an absolute smell memory. 5. The nature of the recognition consciousness or experience of familiarity (by the method of Lehmann with visual and smell stimuli). 6. The age, sense-type and emotional basis of the earliest memories (by a *questionnaire* answered by students in the department of philosophy). 7. The effect of relatively simple attention upon the breathing as compared with the effect of exciting or depressing emotion.

University of Wisconsin.—Subjects studied in the laboratory of experimental psychology in the University of Wisconsin were (1) the relations of recollection; (2) the visual perception of depth; (3) certain aspects of suggestion; (4) general and special practice, and (5) the curve of practice for complex reactions. The psychological department of the university has recently moved into its new laboratory on the ground floor of Science Hall. The new quarters are a bright and commodious suite of six rooms, admirably laid out and especially adapted for their present purpose. Besides the general laboratory, the professor's office, the store-room and the work shop there is a well-equipped dark room, a large sound-proof cabinet for acoustic and reaction time experiments and a room for anthropometric measurements. The director of the laboratory, Professor Joseph Jastrow, published in 1900 his book, *Fact and Fable in Psychology* (New York).

Yale University.—In the psychological laboratory experiments on the rapidity of movements in penmanship have shown that a slant of about twelve degrees from the perpendicular gives the greatest rapidity. The first laboratory for experimental phonetics in the United States was started during 1900 as a part of the laboratory of psychology. Only one other laboratory in the world is devoted to similar research—that of the Abbé Rousselot in the College de France in Paris. A regular course in experimental phonetics with lectures and laboratory exercises is given. A large number of tracings of speech curves has been made, including the speech sounds of various languages and dialects, including those of Japan, India, Egypt, and different parts of Europe, while arrangements have been made for the collection of speech and song records of the American Indians. The Scripture color-tester received a gold medal at the Paris Exposition. The Vol. VIII. of *Studies from the Yale Psychological Laboratory* appeared during 1900.

PUBLIC HEALTH. Some years ago an anti-noise society was established in New York City with a view to suppressing unnecessary noises by night and by day in the city. Bells on horses drawing street cars, church bells, street cries, hand organs, loaded trucks, improper pavements, and carelessly fitted car-rails received consideration. It was found to be very difficult to secure the necessary legislation even for the remedy of noises preventing sleep, and thus listed as injurious to health. The society was successful in securing the passage of a statute forbidding transportation of architectural iron through the streets unless so wrapped as to prevent ringing and clanging. No other result was secured. The rights of people who need rest and of invalids are considered in an ordinance lately passed by the Middlesex County Council, England, to suppress the cries of street hawkers. Prosecutions have been begun actively. See SANITATION and VITAL STATISTICS.

PUBLIC HEALTH ASSOCIATION, AMERICAN, held its twenty-eighth annual meeting at Indianapolis, Ind., beginning October 22, 1900. Dr. Peter H. Bryce, of Toronto, Ontario, was president of the association. The twenty-ninth annual meeting will be held in Buffalo, N. Y., September 16-20, 1901. Dr. Benjamin Lee, of Philadelphia, Penn., is the present president of the association.

PUCCHINI, GIACOMO, noted Italian operatic composer, was born at Lucca on June 22, 1852. After receiving private instruction in his native town, he studied, together with Mascagni and Leoncavallo, at the Milan Conservatory, under Ponchielli, the composer of *La Gioconda*. In 1893 he was appointed professor of composition at that institution. His first opera, *Le Villi*, produced in 1884 at the Teatro dal Verme, Milan, won him recognition, which was further increased by his *Edgar*, given at La Scala in 1889. *Manon Lescaut*, lyric drama in four acts, first performed in Turin in 1893, placed him with Mascagni and Leoncavallo in the front rank of the younger Italian composers of the day. He infused into it more genuine passion than Massenet in his opera of the same name, but it lacks the spirit of the period pervading the work of the French composer. *La Bohème* in four acts was first brought out at Turin. Based on Murger's *Vie de Bohème*, it successfully depicts the happy-go-lucky life of the Bohemians, with a touch of pathos at the tragic end of the opera. These last two operas were given in New York in May, 1898, by the Bagetto Italian Opera Company. *La Bohème*, with Melba as Mimi, enjoyed success in London, 1899, and in the United States in 1899 and 1900. Puccini's latest creation, *Tosca*, a grand opera in three acts, has a masterly libretto by Giacosa and Illica based on Sardou's drama. It was a great success at its initial performance at the Teatro Costanzi in Rome in January, 1900, and since then was given in London. (See MUSIC.) Puc-

cini's music is not so melodious or passionate as Mascagni's. It impresses rather by novel effects and cunning orchestration, though not always exactly appropriate to the situation.

PUPIN, MICHAEL IDVORSKY, whose important discoveries extending the range of long-distance telephony and making possible the use of the telephone with submarine cables, are referred to elsewhere in this volume of the INTERNATIONAL YEAR-BOOK (see article PHYSICS), is professor of electro-mechanics in Columbia University, New York. He was born October 4, 1858, at Idvor on the military frontier of Austria, and is of Servian nationality, his ancestors having settled in that region some 250 years ago. After receiving his elementary education at the village schools, young Pupin was sent to a school preparatory for the army at Prague, but did not follow this line of study, coming to America in 1874. He entered Columbia College in 1879 and graduated in 1883, devoting particular attention to the study of mathematics and physics, subjects which he further pursued at Cambridge, England. Appointed John Tyndall Fellow by Columbia, he went to the University of Berlin, from which he received the degree of Doctor of Philosophy with honors in 1889. He returned to Columbia as instructor in mathematical physics, and in 1892 was promoted to the position of adjunct professor of mechanics. Professor Pupin has lectured on the Theory of Electricity, Thermodynamics, and the Electro Magnetic Theory of Light, and in the laboratory of electro-mechanics of the university has carried on a number of important researches. The most important of these are Electrical Resonance, published in a series of papers in the *American Journal of Science* in 1893 and 1894, Electrical Wave Propagation, Particularly Over Non-uniform Conductors, published in a number of papers in the proceedings of the American Mathematical Society, the American Physical Society, and the American Institute of Electrical Engineers in 1899 and 1900, and the Theoretical and Experimental Consideration of the Magnetization of Iron. In the course of his experiments upon electrical waves Professor Pupin made his discovery which promises so much for telephony. It was the result of a mathematical study of the propagation of electrical waves in which the theory advanced by Professor Pupin was subjected to experimental proof. Its applicability to long-distance telephony was readily demonstrated, and the rights of the invention were acquired by the American Telephone Company paying to Professor Pupin a sum stated variously from \$200,000 to \$500,000 in addition to a royalty during the life of the patent.

PYRITE. The production in the United States in 1899 amounted to 174,734 long tons, which was about 18,000 tons lower than the production for 1898. This was not really due to the decrease in the demand for sulphur, but to the fact that the demand in 1898 was an extraordinary one. About 61 per cent. of the product came from Virginia, 23 per cent. from Massachusetts, 16 per cent. from California, Colorado, New York, North Carolina, and Ohio. The use of iron pyrite for the manufacture of sulphuric acid has become of considerable importance, and has increased the production greatly. Some copper pyrite is also used for this purpose, especially when the copper content falls below 3 or 3.5 per cent. The estimated production of pyrites in 1900 was 208,409 long tons, valued at \$694,318. See SULPHUR.

QUAKERS. See FRIENDS, SOCIETY OF.

QUAY, MATTHEW S. See PENNSYLVANIA.

QUEBEC, a province of the Dominion of Canada, with an area, as increased by the act of Parliament in 1898, of 347,350 square miles, and a population of (1891) 1,488,535, mostly of French origin. Capital, Quebec, with a population estimated in 1900 at 65,000. Montreal, the most populous city in the Dominion, had an estimated population of 288,657 in 1900. The province is administered by a lieutenant-governor, appointed by the governor-general of the Dominion, and a responsible ministry. There are two chambers in the province, a Legislative Council consisting of 24 members, appointed for life by the governor-general, and a Legislative Assembly of 74 members elected for four years on a property qualification. The province has 24 seats in the Dominion Senate and 65 in the House of Commons.

Industries.—The official returns for the calendar year 1898 (the last available) indicate a general decline in the mining industry. The output of iron ore has fallen off from 22,436 net tons in 1897 to 17,873 in 1898. The production of gold also shows a decrease from \$6089 in 1897 to \$4916 in 1898. The total amount of copper exported during 1898 was 66,875 pounds against 541,401 in the preceding year, and the output of silver has declined from 80,475 in 1897 to 74,932 in 1898. The total value of the fishery catch during the calendar year 1898 was \$1,761,440, only a slight decrease over the preceding year. The principal catch was cod, \$660,200; lobsters, \$214,417; herring, \$196,353; and salmon, \$170,520. The total value of fish exported during 1898-99 was \$431,859 against \$485,135 in the preceding year. Total amount of fry distributed was 7,248,000 and the capital invested in the industry amounted to \$886,489 at the end of the fiscal year 1899. The amount of subsidies granted by the gov-

ernment to the fishery industry during 1898 was \$31,795, while the federal tax derived from the same industry amounted to \$7571.

Commerce and Banks.—The statistics for the commerce of the province during the fiscal year 1899 show a remarkable increase in the imports and a decrease in the exports, the latter probably due to the decreased output of the mines. The total value of imports was \$72,230,739, against \$62,550,471 in the preceding year. Of the total amount of imports, \$34,933,065 came from the United States and \$16,576,184 from Great Britain. The duty collected on goods imported amounted to \$10,002,839, an increase of nearly \$2,000,000 over the preceding year. The total value of exports, domestic and foreign, was \$70,311,571, against \$73,327,220 in the preceding year. Of the total amount, \$4,773,565 was exported to the United States and \$58,121,869 to Great Britain. The number of commercial failures has increased from 442 in 1899 to 459 in 1900, with liabilities \$6,355,470 and \$4,280,072 assets. The registered merchant marine of the province consisted of 324 steamers and 1051 sailing vessels, with a total net tonnage of 144,586. There were at the end of the fiscal year 1899, 117 banks and bank branches in the province. The 146 post-office savings banks had 19,107 depositors, and deposits amounting to \$5,341,086. The clearings for the year amounted to \$794,109,924, against \$731,264,677 in the preceding year.

Railways, Telegraphs, and Post-offices.—The total railway mileage at the end of the fiscal year 1899 was 3345, and the subsidies received by the railway companies for the same year amounted to \$21,511,354. The government telegraphs had a total length of 1307 miles, of which 1143 were land lines and 164 cable. The number of post-offices at the end of the fiscal year 1899 was 1744, and the number of letters posted, 33,300,000. The 376 money-order offices issued during the year 134,050 orders representing the sum of \$1,972,224.

Instruction and Charities.—The educational system of the province is under the direction of a superintendent of public instruction and a council consisting of 35 members. Education is compulsory between the ages of 5 and 16, and the public schools are maintained by local taxation and government grants. According to the figures for the fiscal year 1899, the number of Roman Catholic institutions was 4900, of which 4585 were under the control of the municipalities and 315 independent. Of the total number there were 4256 elementary schools, with an enrolment of 173,899 and an average daily attendance of 121,290; 487 model superior schools, with 69,715 registered pupils; 131 academies, with 27,037 registered students; 19 classical colleges, with an attendance of 5598; 2 universities, and 3 schools for deaf mutes and the blind. The Protestant educational institutions numbered 979, of which 966 were controlled by the municipalities and 13 were independent. There were 891 elementary schools, with an enrolment of 27,393, and an average daily attendance of 19,684; 52 model schools, with 3757 pupils; 29 academies, with 5466 students; 3 colleges affiliated with the universities; 2 universities, and 1 school for deaf mutes and the blind. Besides the denominational institutions enumerated above, there were 7 schools of arts and manufactures with 1167 students, and 4 agricultural and dairy schools with an attendance of 116. Of the total number of 10,775 teachers, 6732 were lay teachers, 1431 belonged to religious orders, and 2612 were nuns. The total amount spent on education for the fiscal year 1899 was \$1,757,495, of which \$308,800 was contributed by the government and the rest by the people. There were also in the province 50 libraries with 567,812 volumes. The number of Indian schools was 17, with an enrolment of 644 and an average attendance of 323. The principal charitable institutions of the province consisted of three asylums for deaf and dumb, 5 for the insane, and 1 for the blind; 5 industrial and 5 reformatory schools, with a total of 4498 inmates. The cost of maintenance, which amounted in 1898 to \$371,175, was entirely furnished by the government.

Finances.—The revenue for the fiscal year 1899 amounted to \$4,223,579. The main sources of revenue were: Dominion subsidies, \$959,253; woods and forests, \$804,289; licenses, \$613,748; Montreal, Ottawa & Occidental Railway, \$300,828, and succession duties, \$287,996. The expenditures for the same year were \$4,201,023. The main items of expenditure were as follows: Interest on debt, \$1,425,970; administration of justice, \$508,610; charities, \$379,571; education, \$375,143; civil government and contingencies, \$269,651. The gross debt of the province was \$36,191,866. The total assets, including the Dominion debt allowance but excluding public buildings, amounted to \$13,867,140, leaving a net debt of \$22,324,726, or \$13.91 per head.

QUEENSBERRY, eighth Marquis of, JOHN SHOLTO DOUGLAS, died in London January 31, 1900. Born July 20, 1844, he succeeded his father to the title in 1858, and from 1872 to 1880 sat in Parliament as a representative peer for Scotland. He is best remembered as the author of the prize-ring rules that bear his name.

QUEENSLAND, a state of the Australian commonwealth under the constitution taking effect January 1, 1901, comprises the northeastern part of Australia, lying to the north of New South Wales. It has a coast line of 2250 miles and an estimated

area of 668,252 square miles. The population at the beginning of 1900 was reported at 512,604. Capital, Brisbane.

Government.—The form of government in Queensland was not changed by the adoption of the new constitution of the federated commonwealth of Australia. The Queensland constitution, dating from 1859, places the executive authority with a governor (the Right Hon. Lord Lamington since 1895), who is appointed by the British government and is assisted by a ministry of nine members responsible to the legislature. The legislative power is vested in a legislature of two houses, the legislative council and the legislative assembly, members of the former, at present 42 in number, being appointed by the crown for life, and members of the latter, 72 in number, being elected triennially on a basis of manhood suffrage. The premier and treasurer since December, 1899, has been the Hon. Robert Philp. There are justices of the peace, district courts, and a supreme court consisting of a chief justice and four puisne judges.

Finance.—Revenue accrues chiefly from customs and railways, other sources of importance being the rental and sale of government land, posts and telegraphs, stamps, and licenses. The largest expenditures are for interest on the public debt and for public works, including the cost of operating the railways, etc. Revenue and expenditure for 1900 were £4,588,200 and £4,540,000 respectively. The public debt at the beginning of 1900 was £34,348,414.

Industries and Commerce.—About 97 per cent. of the total area of Queensland is government land, of which nearly one-half is forest. The public lands are being gradually alienated by instalment sale or lease. Up to the beginning of 1899 the receipts from the sale of land amounted to £7,784,615. Leases for grazing privileges, as distinct from agricultural leases, cover over one-half of the state's area. Cattle-raising, agriculture, and mining are the principal industries. The largest cereal crop is corn; other products are wheat, oats, barley, potatoes, sugar, coffee, cotton, sugar, and fruits. In 1898 corn production amounted to 2,252,000 bushels; wheat, 607,000 bushels; sugar, 163,000 tons. Fruit raising is becoming a prominent industry. The following figures are for the last reported annual production: Bananas, 36,301,735 dozens; oranges, 1,420,839 dozens; pineapples, 401,692 dozens; mangoes, 191,074 dozens; Cape gooseberries, 80,000 bushels. Gold production up to the beginning of 1899 amounted to 12,926,966 ounces, valued at £44,449,955; the output for the year 1898 was 912,048 ounces, and for 1899, 947,626 ounces. In addition to gold, the principal minerals taken out in 1898 were as follows: Tin, 1025 tons, value, £36,502; silver, 104,021 ounces, value, £10,585; opals, £6645; wolfram, 78 tons, value, £2540; lead, 248 tons, value, £2480; copper, 62 tons, value, £2166; bismuth, 8 tons, value, £700.

The commerce of Queensland is mostly with Great Britain and her colonies; of the imports from other countries, over one-half, or £278,837 in 1898, came from the United States. The total imports and exports for 1899 were £6,764,097 and £11,942,858 respectively.

Communications.—At the end of 1898 the railway open for traffic amounted to 2742 miles; at the end of 1899, 2800 miles, the total cost of construction being over £18,500,000. The railways are owned by the government. At the end of 1898 there were 10,088 miles of telegraph lines, with 18,565 miles of wire and 422 stations; one year later the wire mileage was 18,968. The post-offices in December, 1898, numbered 1166, and in December, 1899, 1239.

QUICKSILVER. See MERCURY.

RABIES. An unusual outbreak of rabies began in the District of Columbia in October, 1899, and continued in the district and in Maryland and Virginia up to the time of the report of Dr. D. E. Salmon, chief of the Bureau of Animal Industry, United States Department of Agriculture, May 31, 1900. Eighteen children and 6 adults were bitten, and 18 head of cattle of the herd belonging to the Government Hospital for the Insane died of rabies during this epidemic. In May, 1900, the disease was considered endemic in the borough of Richmond, New York City, by Dr. R. J. Wilson, who has studied many cases occurring among animals on Staten Island. A report came from Manchester, England, to the effect that the Board of Agriculture regarded rabies as extinct there. In 1895, 672 cases were reported, while in 1899 but 9 were reported. In the county of Lancaster, which had furnished at least 130 cases in 1895, there were but 5 cases in 1898 and none since. No muzzling orders are now in force in Manchester. The Health Department of New York City has decided to erect a special laboratory in the Willard Parker Hospital for the study of rabies by experts, and it is planned to afford Pasteur treatment free to residents of Greater New York. Statistics collected previous to the laboratory method of diagnosis of rabies are not reliable, and persons bitten by rabid animals usually undergo the Pasteur treatment. Therefore it is difficult to state definitely the rate of mortality of the disease. From 65 to 90 per cent. of those bitten about the

face or neck die. From 10 to 50 per cent. of those bitten in other parts of the body die. There are 35 Pasteur institutes in the world: 8 in France, 6 in Russia, 5 in Italy, 2 in Austria, 1 in New York, 1 in Chicago, 1 in Baltimore, 1 in Havana, 1 in Rio Janeiro, 1 in Buenos Ayres, 1 in Saragossa, 1 in Malta, 1 in Bucharest, 1 in Constantinople, 1 in Aleppo, 1 in Tiflis, 1 in Athens, and 1 in Algiers.

RACQUETS AND COURT TENNIS. Racquets, originating early in the century in the English debtors' prisons, is now played in specially constructed courts, and has become for this reason one of our most expensive games. The same is true of the older game of court-tennis, yet both games have enjoyed growth and development in America. At New York, Philadelphia, Boston, Montreal, Chicago, and Tuxedo these games are played by clubs, and during the year 1900 there were a number of important matches. The generally high standing of racquet and tennis professionals permits of amateur-professional matches, as in golf; and in the 1900 tournaments the best players in the world in each class opposed one another on American courts.

The United States amateur racquet championships were held at the Boston Athletic Association, February 6-12. E. H. Miles, after defeating F. F. Rolland, former amateur champion of Canada, beat Quincy A. Shaw, Jr., the holder of the United States championship in the finals; Stockton and Fearing won the doubles championship. On March 7 at the Montreal Racquet and Tennis Club, Miles again beat Rolland and won the amateur championship of Canada. Another notable player in this tournament was Clarence H. Mackay, who was defeated by Rolland in the semifinals. Among other victories of Miles was the championship of the New York Racquet and Tennis Club on March 31. The United States amateur court-tennis championship was held at the same club April 8-11, and this also was won by Mr. Miles, who defeated Stockton. In April Mr. Miles returned to England to defend the amateur court-tennis championship, and did so easily, defeating J. B. Gribble. Mr. Miles also held the famous Marylebone Cricket Club (M. C. C.) Gold Prize, but did not defend his title, which was won by Mr. Gribble. The English amateur racquet championship was again won by H. K. Foster over P. Ashworth, and these two players captured the doubles championships.

RAILWAYS. The year 1900 was marked by continuous prosperity in the railway business and by moderate activity in the construction and improvement of railways. On January 1, 1900, there were in the United States 190,833 miles of railway. During the 12 months of 1900 there were constructed about 4300 miles of new line, making the total mileage for the United States on January 1, 1901, about 195,133 miles. Of the new railway constructed during 1900, the larger portion was built in the Southern and Southwestern States. Texas leads all other States in the mileage of new line built, 318 miles having been constructed. Pennsylvania comes second, with 277 miles; Iowa third, with 267 miles; Minnesota fourth, with 251 miles, and West Virginia fifth, with 225 miles. The bulk of the new construction consisted in extensions of existing roads. The largest single stretch of track laid was from Sapulpa, Ind. Terr., to Denison, Tex., 142 miles. Similar detailed figures are not available for the new railway construction of foreign countries, and only a general review of the most important works of the year can be given here. England and Continental Europe may be quickly dismissed with the remark that, except for improvements and short terminal extensions, the railway work of the year in these countries was small in amount and of slight importance. The Behr mono-rail railway was proposed in England for adoption on an express line between Manchester and Liverpool, and a bill authorizing the construction of such a road was discussed before a House of Commons committee in the spring of 1900. It was the intention of the promoters of the company to have the cars run at a rate of 110 miles an hour and cover the distance between the two cities in 20 minutes. The system to be employed had previously been used on an experimental line at the Brussels Exhibition in 1897, and consisted of a single rail, carried on steel trestles about 4 feet in height with guide rails below. The cars would be operated by electricity produced at a power station at Warrington and transformed at various points along the line. The capital stock of the company amounted to £2,000,000 and the bonds to £660,000. The estimated cost of construction of the line was put at £1,750,000 and that of the land and buildings at £401,600. The committee rejected the bill, the chairman expressing his doubts of the sufficiency of the brake power for trains running at such speed and referring to the probable interference with local interests. The committee expressed the opinion that where a railway entered a large city the first question to consider was that of underground approach. The line referred to was designed only for passenger traffic, and the merits of the system were seriously and extensively discussed by engineers. The Barmen-Elberfeld-Vohwinkel Suspended Railway in Germany was opened to traffic on October 24, 1900. In this railway an overhead rail, from which the cars are suspended, is supported on a heavy framework. The

bottom of the car is about 15 feet above the surface of the ground and about 10 feet below the rail. The Elberfeld portion, which is now in operation, is about 9 miles in length, while the extension to Barmen will be completed, it is expected, by 1902. In India the British-Indian government has turned its attention to railway work on an extensive scale. Among the more important undertakings of the year were the final section of the Hyderabad-Godavery Valley Railway, 87 miles long, from Park-harma to Basar, and a new railway from Kalka to Simla, a distance of 60 miles. Another Indian railway completed during 1900 which is deserving of notice is the 12-mile line from Peshawar to Khyber Pass, built to enable the government to throw troops into Afghanistan on short notice. In China a great deal more was done in the nature of demolition than in the construction of railways, due to the Boxer uprising and the international complications which followed. Of all Asiatic countries, Russia is the most active in railway construction, and the notable work during 1900 included, besides the trans-Siberian line (which is considered at length in article TRANS-SIBERIAN RAILWAY), a projected trans-Persian line 1300 miles long, running from Dsulfu, near the trans-Caucasian border, to Bander Abbas, on the Persian Gulf. In Africa the two most important railways on which work was done were the Soudan Railway, to which about 20 miles were added, including a bridge over the Bukoy River, and the Uganda Railway, which in November, 1900, had 452 miles completed and was under construction up to the five hundredth mile. Mexico displayed considerable activity in railway construction during 1900, but in Central and South America there was no work done which was noteworthy. Among the South American lines projected, the most important, perhaps, was the 60-mile extension of the Guatemala Northern Railway. In Cuba, American capitalists launched a project to build a trunk-line railway lengthwise of the island. The island of Haiti built its first railway during 1900, and railway construction was in progress in Formosa, Siam, Java, the Malay States, and French Melo-China.

Locomotives.—The tendency everywhere, and particularly in the United States, is toward heavier locomotives. Ten years ago an 8-wheel locomotive with 18-by-24 inch cylinders and a boiler having 22 square feet of grate area and about 1200 square feet of heating surface was in quite general use for first-class passenger service; the weight on the driving-wheels seldom exceeded 65,000 pounds, and the total weight of the engine in working order was usually within 100,000 pounds. In freight service engines weighing between 100,000 and 120,000 pounds on the drivers were considered powerful locomotives. In 1900 heavy passenger locomotives, if provided with two pairs of drivers, have from 85,000 to 105,000 pounds upon them; and if of the 10-wheel type, they have from 100,000 to 135,000 pounds upon drivers; the cylinders are 19 or 20 inches in diameter; the heating surface is from 2200 to 3000 square feet, and the grate area is from 30 to 36 square feet, unless wide grates are provided for burning some special kind of coal. A freight locomotive with a weight of 50,000 pounds on the drivers is not considered a large locomotive for ordinary road work, and for mountain service and for pushing on heavy grades engines have been built with as much as 225,000 pounds on the drivers. As a specific illustration of the great size attained by American locomotives, the consolidation freight engines built for the Pittsburg, Bessemer & Lake Erie Railroad in 1900 may be taken. The main dimensions of one of these engines, compared with the next largest freight engine ever built, are as follows:

Railway	P., B. & L. E.	Illinois Central
Type	Consolidation	12-wheel
Name of builder.....	Pittsburg	Brooks
Driving-wheels	4 feet 6 inches	4 feet 9 inches
Wheelbase, driving.....	15 " 7 "	15 " 9 "
Wheelbase, total.....	24 " 4 "	26 " 6 "
Weight on drivers.....	225,000 pounds	193,200 pounds
Total.....	250,300 "	232,200 "
Engine and tender.....	391,400 "	364,900 "
Cylinders, single.....	24 by 32 inches	23 by 30 inches
Boiler, diameter.....	7 feet 4 "	6 feet 8 "
Pressure	220 pounds	210 pounds
Firebox	11 feet by 3 feet 6¼ inches	11 feet by 3 feet 6 inches
Tubes: Number.....	406	424
Diameter.....	2¼ inches	2 inches
Length.....	15 feet	14 feet 8¾ inches
Heating surface, tubes.....	3,564 square feet	3,237 square feet
Total.....	3,805 " "	3,500 " "
Grate area.....	36.8 " "	37.5 " "
Water in tank.....	7,500 gallons	7,000 gallons
Coal on tender.....	28,000 pounds	28,800 pounds.

The record of locomotive manufacture in the United States for 1900 shows a decided increase over 1899. Outside of locomotives built by the railways themselves, there were 3153 locomotives built in the United States during 1900. Of this total, 545 were compound locomotives, 21 were compressed-air locomotives, 102 were geared locomotives, and 48 were electric locomotives. Altogether 505 locomotives were built for export.

Cars.—The increase in the size of locomotives has been accompanied by a corresponding increase in the size and capacity of freight cars. Cars of 100,000 pounds' capacity are now extensively used for coal and ore. The total number of railway cars of all kinds constructed in the United States during 1900 was 124,106, not including the cars built by the railways themselves. Of this total, 113,070 were freight cars, 1515 were passenger cars, and 6091 were street cars for use in America; and 2561 freight cars, 121 passenger cars, and 748 street cars were built for export. The extension of the steel-car industry is shown by the fact that of the total freight cars turned out during the year 14,464 were all steel, 447 of these being for export, while in 1899 the total was 10,500.

Traffic and Operation.—The annual report of the statistician of the Interstate Commerce Commission, issued in October, 1900, contains the latest complete statistics of railway operation in the United States. These statistics cover the year ending June 30, 1899, and the following abstract from the voluminous tables given in the report published in the *Engineering News* gives the facts of general interest:

"Capital.—The amount of railway capital outstanding on June 30, 1899, was \$11,033,954,898. This represents a capitalization of \$60,556 per mile of line. Of this amount, \$5,515,011,726 existed in the form of stock. The amount of current liabilities not included in the foregoing capital statement was \$554,330,022, or \$3042 per mile of line. The amount of capital stock paying no dividend was \$3,275,509,181, or 59.39 per cent. of the total amount outstanding. The amount of funded debt, excluding equipment trust obligations, which paid no interest, was \$572,410,746.

"Public Service.—The number of passengers carried during the year was 523,176,508, showing an increase for the year of 22,109,827. The number of tons of freight carried during the year was 959,763,583, an increase of 80,757,276 being shown.

"The average revenue per passenger per mile for the year ending June 30, 1899, was 1.925 cents, for the preceding year it was 1.973 cents. The revenue per ton of freight per mile was 0.724 cent, while for 1898 it was 0.753 cent. An increase in mileage earnings is shown for both passenger and freight trains.

"Earnings and Expenses.—The gross earnings from operation were \$1,313,310,618, being \$66,284,497 more than for the preceding fiscal year. The operating expenses were \$856,968,999, the increase in this item being \$38,995,723. The income from operation, or the amount of gross earnings remaining after the deduction of operating expenses, generally designated as net earnings, was \$456,641,119, an increase as compared with the year ending June 30, 1898, of \$27,288,774. The average amount per mile of line for 1899 was \$2435, and for 1898, \$2325. The amount of income received from sources other than operation was \$148,713,983. The amount of dividends declared during the year, including \$80,114 other payments from net income, was \$111,089,936, leaving as the surplus from the operation of the year \$53,064,877, the corresponding surplus for the year ending June 30, 1898, being \$44,078,557.

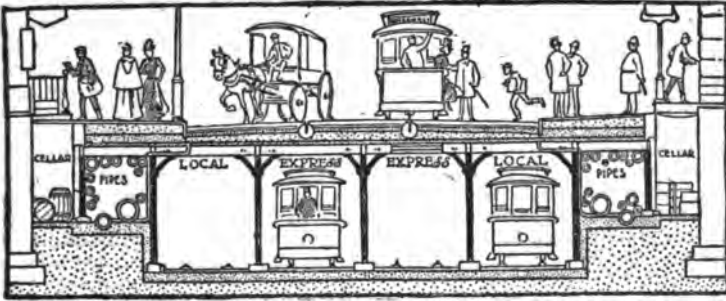
"Accidents.—The total number of casualties to persons on account of railway accidents during the year ending June 30, 1899, was 51,743. The aggregate number of persons killed as a result of railway accidents during the year was 7123, and the number injured was 44,620."

For railroads in interstate commerce, see ILLINOIS; railroad rates as fixed by railroad commissioners, see SOUTH DAKOTA; right of railroad to fill in submerged lands not specifically deeded to it by charter, see ILLINOIS; railroad connections and separate cars for negroes, see SOUTH CAROLINA. See also INDUSTRIAL COMMISSION (paragraph on Transportation).

RAPID TRANSIT. The magnitude of modern works designed solely for the rapid transportation of passengers in larger cities is well illustrated by the systems of rapid transit railways being constructed by the cities of Boston and New York in America, London in England, and Paris in France. Work was in active progress on all of these systems during 1900.

Boston.—The rapid transit railway system of Boston, Mass., comprises a combination of subway and elevated railway lines, built partly by the city and partly by private capital, but operated by a private corporation. The subway portion of the line was the first to be constructed and work may be said to have begun in 1894, although the scheme was in progress of development for some three or four years previously. The object of the Boston subway was primarily to relieve the congestion of traffic in the business section of the city, due to the surface street railways. In one sense, therefore, it may be called the underground terminal of the surface electric railway lines entering the business district of the city of Boston. The original length of

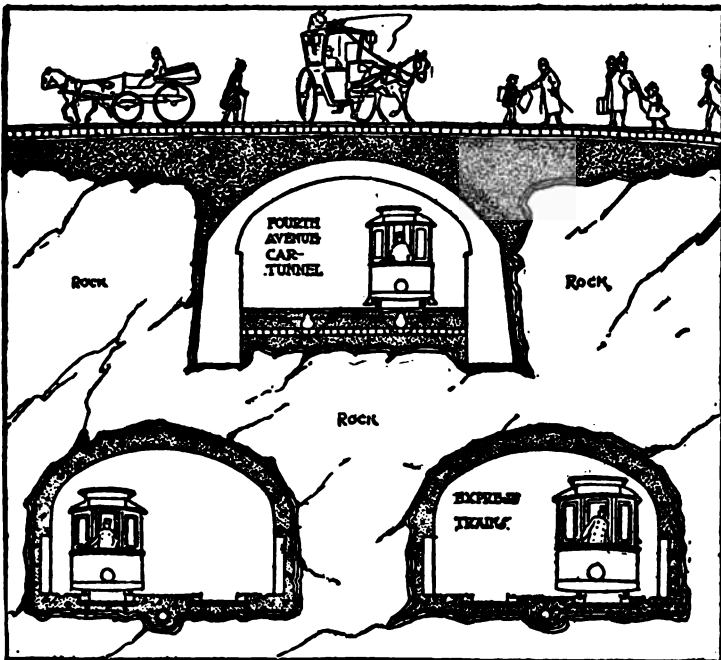
the railway was 10,810 feet, divided between double-track and four-track lines, and its cost was about \$3,700,000. In 1898 the original subway was opened for traffic, and the same year steps were taken to construct an extension under an arm of the harbor to East Boston. This tunnel line will be about one and one quarter miles



Courtesy of Pearson's Magazine.

STRUCTURE OF THE RAPID TRANSIT TUNNEL IN ELM STREET AND FOURTH AVENUE TO TWELFTH STREET, NEW YORK.

long and will be about one-third submarine work. Construction was begun in 1900 and was actively in progress at the close of that year. The underground work has been undertaken at the expense of the city of Boston, but the tunnel is leased and will be operated by the corporation which is building the elevated railway, and which controls the principal surface electric railway lines of the city. The elevated line runs from Roxbury to Charlestown, connecting with each end of the subway by



Courtesy of Pearson's Magazine.

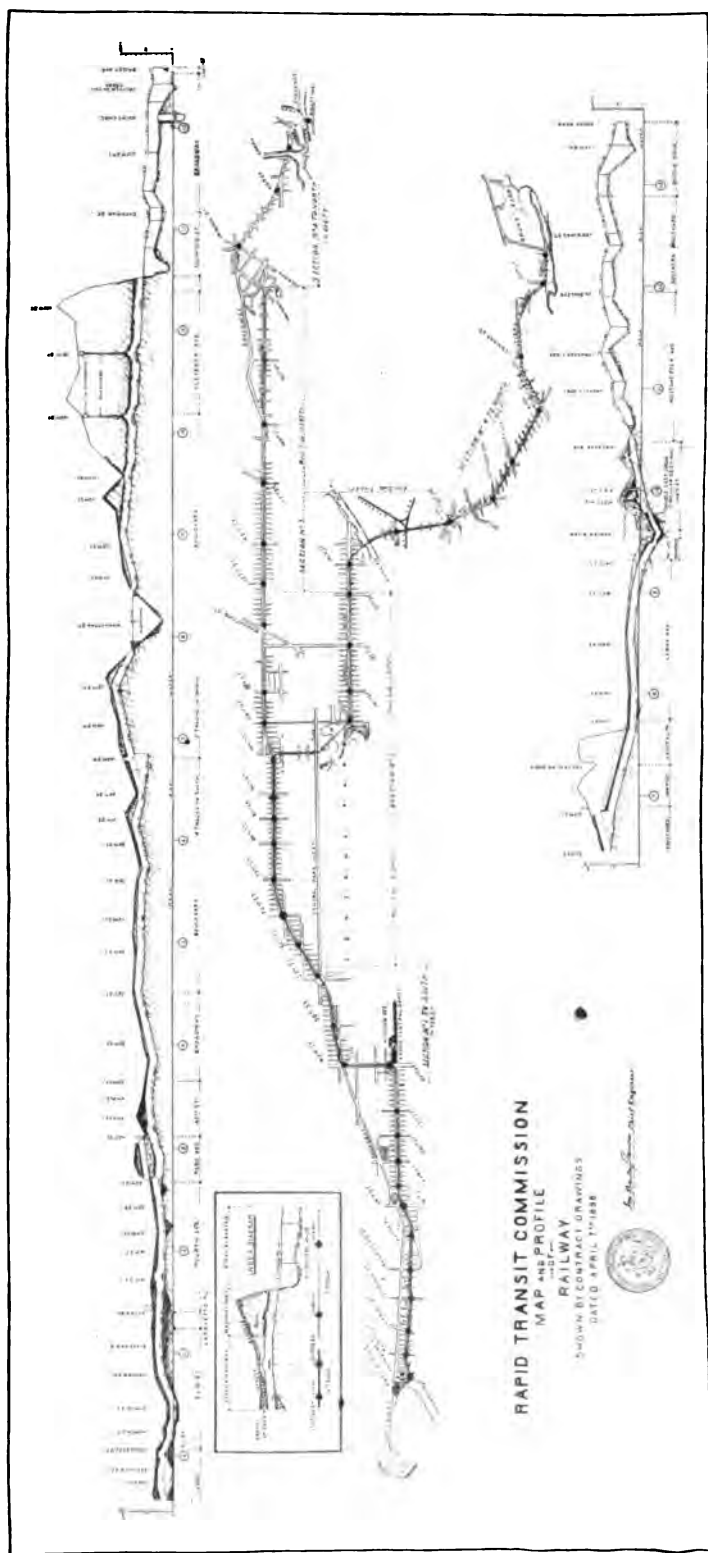
STRUCTURE OF THE TUNNEL WHERE IT MUST RUN UNDER THE PRESENT FOURTH AVENUE TUNNEL, NEW YORK.

a spur line, so that there is a complete loop enclosing the principal business section of Boston. The total length of the line between terminals, not including the subway, is about seven miles, and it is to be operated by the third-rail system of electric traction. Steady progress in the work on this road was made during 1900.

London.—The first attempt made anywhere to carry out rapid transit railways was in London, and dates back to 1853, when powers were obtained to build a line $2\frac{1}{4}$ miles long from Edgware to King's Cross. From this commencement grew the Metropolitan and Metropolitan District railways, parts of which are underground and parts of which are on the surface. These roads were followed by the construction of the Waterloo & City Underground Railway, built in 1894-97, and the City & South London Railway, built in 1886-90. In 1900 the Central London Underground Railway was opened for traffic from Shepherd's Bush to the Bank of England, $5\frac{3}{4}$ miles. This railway is described as follows in an excerpt from an article published in *Engineering* of London: "The Central London Railway runs from Shepherd's Bush to the Bank, a distance of $5\frac{3}{4}$ miles, the whole distance being in deep tunnel, at depths varying from 60 to 90 feet. For the greater part of the distance the two tunnels are side by side, but near the General Post Office, where the road is narrow, one is above the other. Each tunnel is 11 feet, 6 inches in diameter, and has a cast-iron lining. There are 13 stations on the line, and it is intended to cover the distance from terminus to terminus at an average speed of 14 miles an hour, the maximum speed being 25 miles an hour. Each train will consist of seven cars, designed to carry 336 passengers, and weighing, when loaded, 105 tons, without the locomotive. The trains are to follow each other, at the busy hours of the day, at $2\frac{1}{2}$ minutes intervals, and 28 locomotives have been provided to work the traffic. Each locomotive has two four-wheeled trucks, and weighs 97,000 pounds. It has four motors, one on each axle, of 117 horse-power, the armatures being built on tubes, afterward forced on to the axles. The length over the body of the locomotive is 26 feet, 7 inches, and over the buffers, 30 feet, the width being 7 feet, 8 inches. The armatures are built directly on to the axles, and hence the motors lie between the frames, quite low down. Over them is a deck, on the central portion of which is a very roomy cab, from which an excellent view of the road can be obtained. Forward and aft of the cab are resistances, placed under sloping covers, which give a wedge-shaped appearance to the ends of the locomotive. The coaches have been built partly by the Ashbury Railway Carriage & Iron Company, and partly by the Brush Electrical Engineering Company. They are entered at the ends, and have central passages, the seats being arranged both lengthwise and crossing; the lighting is most excellent. The power for working the railway is generated in a very spacious house at Shepherd's Bush, and transmitted through the tunnels to three converting and distributing stations." During 1900 a contract was closed for building the Euston & Hampstead underground line at a cost, it is stated, of \$20,000,000. The most important of the other lines proposed during the year is a railway between Waterloo Station and Baker street, across the city, having branches to Paddington Station, and to the Elephant and Castle to the south. This line will have a tunnel under the Thames. Extensions of the Central London line were in progress during 1900, and the company requested permission from Parliament to extend its line from the Bank to Waterloo Station. The South London Electric Railway was also in course of construction from Finsbury Park to the city. The purpose of all of the London underground lines is to intersect diametrically the circle formed by the Metropolitan and Metropolitan District railways, and thus provide the inclosed district with outlets to the outlying territory.

New York.—During the year 1900 a beginning was made on the excavations for the Rapid Transit Underground Railway in New York City, and surveys were made for an extension of the line south to Battery Park and thence across the East River to Brooklyn. The contract for constructing the original route on Manhattan Island was let to John P. McDonald for \$35,000,000, and not only was work begun, but considerable progress was made during the year. Beyond these brief statements of progress, there is little to be said regarding this work until construction shall have progressed further. In addition to the underground line an important piece of work looking toward improved transit facilities lengthwise of Manhattan Island was begun by the Manhattan Elevated Railway, and consisted in beginning work on the line installation, power-house and rolling stock necessary in changing the motive power of its lines from steam to electricity. See ELECTRIC STREET RAILWAYS.

Paris.—The project for an underground railway in Paris dates from 1883, and as developed, it comprises a system of combined underground, open cut, and viaduct line covering practically the entire territory enclosed by the city wall. During 1900 the main artery of this system, extending from the Porte de Vincennes to Porte Maillot and Porte Dauphine, $8\frac{1}{2}$ miles, was completed at a cost of 36,941,000 francs and opened for traffic. The road is operated by electricity on the third-rail system. The power plant being located upon the Quai de la Rapie, and furnishing continuous current at 600 volts and triphase current at 5000 volts and 25 periods, which will be transformed into continuous current at distant stations. The trains used are made up of one motor car, to which are attached two or three ordinary cars, and the rolling stock now on hand includes 191 cars, of which 46 are motor-cars. The motor-cars are operated by two 100 horse-power Westing-



OFFICIAL PLAN OF NEW YORK'S RAPID TRANSIT SYSTEM, NOW IN PROCESS OF CONSTRUCTION.

house motors arranged for series-parallel control. The normal speed of the motor is 450 revolutions per minute. Each motor-car will pull three, and perhaps four, of the ordinary cars. The station arrangement varies with the location; but the ordinary station has two platforms—one each side the line; each 246 feet long, 13.12 feet wide, and located 18.04 feet apart, across the tracks.

RECREATION PIERS. Following the example of New York, the city of Philadelphia, in October, 1899, finished the first of a series of recreation piers on the river front. The Philadelphia pier includes a large open area on the recreation deck, as well as an enclosed pavilion. There are now some half a dozen recreation piers in New York.

RED CROSS, AMERICAN NATIONAL, incorporated under the laws of the District of Columbia, October 1, 1881, April 17, 1893, and by special act of Congress, June 6, 1900, for the relief of suffering by war, pestilence, famine, flood, fires, and other calamities of sufficient magnitude to be deemed national in extent. The organization acts under the Geneva treaty, the provisions for which were made in the international convention at Geneva, Switzerland, August 22, 1864, and since signed by nearly all civilized nations, including the United States, which gave its adhesion March 1, 1882. Ratified by the Congress of Berne, June 9, 1882. Proclaimed by President Arthur July 26, 1882. The Red Cross has worked on eighteen fields in nineteen years and disbursed in money and materials nearly two millions of dollars: Michigan fires, 1881; Mississippi floods, 1882, 1883; Mississippi cyclone, 1883; Ohio and Mississippi flood, 1884; Texas famine, 1887; Mt. Vernon cyclone, 1888; yellow fever, Florida, 1888; Johnstown disaster, 1889; Russian famine, 1891, 1892; Pomeroy, Iowa, cyclone, 1893; South Carolina Island tidal wave, 1893; Armenian massacres, 1896; Cuban relief, 1897, 1898; Spanish-American War, 1898; Texas disaster, September, 1900. President, Clara Barton, Glen Echo, Md.; acting secretary, E. S. Mussey, 470 Louisiana avenue, Washington, D. C.; headquarters, Washington.

REFORM CHRISTIAN SCIENCE CHURCH ASSOCIATION, an offshoot from the original church founded by Mrs. Eddy, was incorporated in Washington in 1899. This society objects to the prominence of Mrs. Eddy's personality in the regular denomination and charges the latter body with "malicious mental malpractice." The number of adherents is said to be many thousands. They control the International Metaphysical University, of Washington, and publish the *Washington News Letter*.

REFORMED CHURCH IN AMERICA (DUTCH), founded by Dutch settlers from Holland, was under the supervision of the classis at Amsterdam until late in the eighteenth century. It maintains Calvinistic doctrines, similar to those of the Reformed Church of Holland; is semi-liturgical in worship; and practically Presbyterian in polity. The general synod, which met on June 6, 1900, at Asbury Park, N. J., recommended to the classes several amendments to the constitution, and called attention of the churches to the educational and missionary work of the denomination, commending especially the twentieth century missionary movement. Their missionary fields in Arabia, China, India, and Japan, included 39 churches, with 92 missionaries and 4597 communicants, a work to which \$155,943.58 was donated. The report of the educational committee shows continued interest on the part of the church and indicates a prosperous year. A total of 643 churches, 715 ministers, and 109,899 members represents the present strength of the denomination, which has shown a slight increase in membership for 1900, but substantial progress in the last ten years. President of the general synod, Rev. Edward P. Johnson; stated clerk, Rev. William H. De Hart, Raritan, N. J.

REFORMED CHURCH IN THE UNITED STATES (GERMAN), founded 1747 by emigrants from those provinces of Germany where the Reformed Church prevailed and asserted its independence of the Dutch Church in 1793. The general synod, organized 1863, meets triennially, and holds its next session May 20, 1902, at Baltimore, Md. The reports of the enterprises of the church for the past year indicate a period of uniform success; the mission work in China and Japan has recently been reinforced by additional missionaries; the home mission board now enrolls 100 branches, divided into Bohemian, Hungarian, German-English, Harbor, and English departments; the educational institutions, 19 in number, of which two are in Japan, are well organized; the board of church-building has experienced the most prosperous year in its history; the board of publication, under new management, is located at 1306 Arch Street, Philadelphia, and 20 periodicals, 12 in English and 8 in German, are issued under the authority of the church. This denomination has a membership of 242,831, and now shows a material increase for the period of 1890-1900; having 1074 ministers and 1660 churches, which contributed, the past year, for benevolent purposes, \$244,430;

ror congregational purposes, \$1,181,350. Stated clerk of the general synod, Rev. John P. Stein, D.D., Reading, Penn.

REFORMED EPISCOPAL CHURCH, organized 1873, in New York City, by members of the "Low Church" party in the Protestant Episcopal Church, on account of seeming Romanistic tendencies in that church. The progress of the denomination, after the first ten years, during which its growth was remarkable, has been characterized rather by internal development than by outward extension. It includes (1900) 7 bishops, 103 ministers, 104 churches, and 9743 members, an increase of 1308 since 1890.

REFORMED PRESBYTERIANS, descended from the Reformed Presbyterian Church of Scotland, are organized into several divisions. Returns for the past year assign the *Reformed Presbyterian Church in the United States (Synod)* 124 ministers, 113 churches, and 9790 members; *Reformed Presbyterian Church in North America (General Synod)*, 33 ministers, 36 churches, and 5000 members; *Reformed Presbyterian Church (Covenanted)*, 1 minister, 1 church, and 40 members; *Reformed Presbyterian Church in United States and Canada*, 1 minister, 1 church, and 608 members. All these branches, excepting the first, which has decreased slightly, show a small increase in membership during the past decade.

REGENERATION. See BIOLOGY.

REMEY, GEORGE COLLIER, rear-admiral of the United States Navy, took command of the American fleet at Taku, China, June 24, 1900, relieving Admiral Kempff. He was born at Burlington, Ia., in 1841, and graduated from the United States Naval Academy in 1859. He was for two years attached to the *Hartford* of the East India squadron, and at the opening of the Civil War he was commissioned lieutenant. He was present at the siege of Yorktown, in the engagement at Battery Wagner in 1863 and commanded the naval battery on Morris Island. In the assault on Fort Sumter, September 8, 1863, he commanded a division of boats in the night attack, and was taken prisoner. After the war he was at various stations, and was promoted lieutenant-commander (1865), commander (1872), and captain (1885). He was placed in command of the navy-yard at Norfolk, 1886-89, and in 1892-95 he was captain of the navy-yard at Portsmouth. He received his commission as commander in 1897, and was in command of the naval base at Key West, Fla., during the Spanish-American War. In 1899 he was commandant of the navy-yard at Portsmouth, N. H., and in the same year became rear-admiral. During 1900 Admiral Remey commanded the Asiatic squadron.

REPUBLICAN LEAGUE OF THE UNITED STATES, NATIONAL was organized in 1887 by about 350 Republican clubs of the United States, to further the interests of the party. The last biennial convention was held at St. Paul, Minn., June 17, 1900. President, Isaac Miller, Hamilton, Ill.; secretary, D. H. Stine, Newport, Ky.

RESERVOIRS. See DAMS.

RÉUNION, an island in the Indian Ocean belonging to France. It has an area of 965 square miles and a population, estimated, in 1897, at 173,192, including over 15,000 British Indians, 4500 natives of Madagascar, about 10,000 Africans, and over 800 Chinese. The largest town is St. Denis, with a population of 32,850 in 1899. The principal products of the island are sugar, of which there were exported 31,418 tons in 1898, coffee, cacao, vanilla, and spices. The trade of the island is quite extensive in comparison with its population, and is mostly with France. The total value of the imports and exports for 1898 amounted to 19,765,268 francs and 19,027,857 francs respectively. The imports and exports of France, and the French colonies, to and from the island for the same year, amounted to 12,006,075 francs, and 18,669,500 francs respectively. The shipping entered during 1898 amounted to 155 vessels, with an aggregate tonnage of 181,261. The local budget for 1898 balanced at 5,979,077 francs. The amount expended by the French government on the colony, according to the budget for 1900, was 4,460,203 francs. The administration of the island is vested in a governor assisted by a privy council and an elective council-general. The island sends a senator and two deputies to the French Parliament.

RHODE ISLAND, a New England State of the United States, and one of the original thirteen, has an area of 1250 square miles. The capitals are Providence and Newport.

Agriculture.—The following shows the production and value of the principal crops for 1900: Corn, 262,304 bushels, \$175,744; oats, 114,484 bushels, \$43,504; barley, 8736 bushels, \$6727; potatoes, 698,232 bushels, \$488,762; and hay, 66,496 tons, \$1,243,475. The *Bulletin* of the National Association of Wool Manufacturers estimated the wool clip of 1900 as follows: Number of sheep, 10,364; wool, washed and unwashed, 57,002 pounds; scoured wool, 33,062 pounds.

Industries.—In 1899 there were 66 cigar factories, with a combined output for the calendar year of 5,811,006 cigars. There were also 3 fruit distilleries in operation during the fiscal year ended June 30, 1900, which produced a small quantity of grape brandy. The total production of oleomargarine was 10,448,162 pounds. During 1900, 3230 acres of oyster grounds were leased, of which 1892 yielded to the State \$10 an acre, and 1338, \$5 an acre, providing a total revenue of \$25,610. Quarrying in 1899 produced granite to the value of \$400,128, and limestone, \$18,239, an increase in a year of \$79,886 in the value of the granite produced, and of the limestone, \$8024. New textile mills built during 1900 include 6 cotton mills and 1 finishing mill. In 1900 there were 83 commercial and business failures, or 0.97 per cent. of the 8585 business concerns in the State, as compared with 319 failures in 1899—3.71 per cent. of the 8599 business concerns in the State at that time. Of the failures in 1900, 22 establishments were engaged in manufacturing, and their liabilities aggregated \$204,670, and 61 were trading establishments, with liabilities amounting to \$518,198.

Commerce.—The imports of merchandise at the ports of Providence, Newport, and Bristol and Warren during the fiscal year ending June 30, 1900, aggregated in value \$1,265,896, an increase for the year of \$388,056, and the exports at Providence were valued at \$18,272, an increase of \$15,298; total foreign trade, \$1,284,168, an increase of \$403,354.

Railroads.—The capital stock of the steam railways in 1900 amounted to \$105,582,475; total indebtedness, \$71,855,919; total receipts for the year, \$43,858,651; net earnings, \$6,614,602; mileage, 209; mileage single track, 435. The capital stock of the electric railways was \$16,582,000; total indebtedness, \$4,410,054; total receipts, \$2,609,572; expenditures, \$1,644,029; net earnings, \$965,543; mileage, 208; mileage single track, 248. No new steam railway construction was reported for 1900.

Banks.—On October 31, 1900, there were 45 national banks in operation and 19 in liquidation, and the capital stock aggregated \$14,880,250; circulation outstanding, \$6,887,244; deposits, \$19,032,442; and reserve held, \$4,864,927. The State banks, June 30, 1900, numbered 4, with capital, \$495,000; deposits, \$720,580, and resources, \$1,397,875; loan and trust companies, 6, with capital, \$2,940,741; deposits, \$40,582,389, and resources, \$46,511,314, and mutual savings banks, 29, with depositors, 142,096; deposits, \$73,489,533; and resources, \$77,432,239. During the fiscal year ending September 30, 1900, the exchanges at the Providence clearing house aggregated \$330,400,500, an increase over the preceding year of \$15,692,700.

Finances.—The receipts of the State treasury for 1900, including a balance from the preceding year of \$52,557, amounted to \$1,518,538; payments to December 20, 1900, including outstanding checks, \$1,302,940; balance in treasury, December 20, 1900, \$215,598. The total bonded debt on January 1, 1901, was \$2,300,000.

Insurance.—In 1900 the fire risks written aggregated \$614,009,579; premiums paid, \$4,847,561, and losses incurred, \$1,297,157. The corresponding figures for 1899 were: Risks, \$574,244,614; premiums, \$4,491,790; losses, \$866,473.

State Charities.—The report of the trustees of the school for the deaf shows a total population of that institution of 68, of whom 39 were boys and 29 girls. On December 10, 1900, the soldiers at the Soldiers' Home in Bristol numbered 186. More than 760 persons were aided during the year from the relief fund of \$12,000.

Education.—The school census of 1899 shows a total enumeration of 79,825 children between the ages of 5 and 16. The enrolment in the public schools was 64,537, and the average daily attendance, 46,087. There were 1913 teachers, 534 buildings used as schoolhouses, and public school property valued at \$5,175,045. The total school revenue was \$1,454,849, and expenditure, \$1,570,895, of which \$998,315 was for teachers' and superintendents' salaries. The average expenditure per pupil for the whole school year was \$34.09—the highest average reported for 1899 by any State. There were 18 public high schools, with 169 teachers and 3436 secondary students; 12 private secondary schools, with 74 teachers and 514 secondary students; and 1 public normal school, with 20 teachers and 172 students in normal courses. One university for both sexes reported 72 professors and instructors, 910 collegiate and graduate students, and a total income of \$129,678, and 1 school of technology reported 23 professors and instructors, 157 preparatory and collegiate students, and a total income of \$56,500. There was also 1 law school, with 14 instructors and 52 students. No medical or theological schools were reported.

Population.—According to the United States census, the population in 1890 was 345,506; in 1900, 428,556; increase for the decade, 83,050, or 24 per cent. The three largest cities, with population in 1900, are: Providence, 175,597; Pawtucket, 39,231, and Woonsocket, 28,204.

Legislation.—Among acts passed by the Rhode Island Legislature were the following: Authorizing a commission to examine voting machines and to make provisions for the regulation of their use; authorizing a commission of 5 members to build and maintain side-paths for bicycles, and authorizing a license fee for their maintenance; providing that persons arrested without warrant for cruelty to animals

might be kept in custody for 24 hours instead of 6 hours, as previously; authorizing the Committee of Towns upon the approval of the commissioner of public schools to consolidate schools and to establish graded schools; prohibiting manufacturing corporations from increasing or decreasing their capital stock except upon a vote of three-fourths of the entire capital stock, and prescribing that all shares must have equal voting rights; directing that insurance companies must pay a tax of 2 per cent. of the gross premiums received on the insurance of property or individuals; authorizing town meetings to be called on the written request of 5 instead of 15 per cent. of the electors of the town; directing the Board of Control of the State Home to report annually to the general assembly instead of, as formerly, to the State Board of Education; appropriating \$1000 to be paid annually to the Prisoners' Aid Association; directing that trade-marks, labels, etc., should be filed with the secretary of state, and fixing a penalty for counterfeiting or imitating the same; authorizing the appointment of 5 commissioners to prepare the State exhibit for the Pan-American Exhibition at Buffalo.

The following game regulations were also made: It was directed that the open season for woodcock, ruffed grouse, and quail should be from October 15 to December 15; for ducks and geese, from August 15 to January 1, and for plover and snipe, from July 15 to January 1. Also making it unlawful to fish in any fresh-water stream or pond except with a single hook and line, and directing that 6 instead of 7 commissioners for inland fisheries should be appointed.

Constitutional Amendments.—Two constitutional amendments were adopted at the elections in November. By one Newport was abandoned as the second capital of the State and sessions of the Legislature were directed to be held once annually at Providence instead of once during the year at Newport and once at Providence. By the second amendment the annual election of State officers was directed to be held in November instead of April in each year, and the provisions requiring that votes for State officers be sent sealed to the secretary of state and counted by the Legislature were repealed.

Elections.—In the State elections for 1900 the Republican nominee, Gregory, received 26,043 votes, and Littlefield, the Democratic nominee, had 17,184 votes. Gregory's plurality was 8859. No change was made in the two Republican representatives to Congress. The amendment to the constitution for one State capital was carried by 24,351 votes for the amendment and 11,959 against it. The vote for the bond issue to complete the new State House was carried: 28,253 votes for the issue and 15,246 against. The State Legislature in 1900 consisted, in the Senate, of 31 Republicans and 6 Democrats, and in the House of 58 Republicans, 13 Democrats, and 1 Prohibitionist. In 1901, the Legislature will consist, in the Senate, of 33 Republicans and 4 Democrats, and in the House, of 60 Republicans and 12 Democrats. In the national election McKinley received 34,784 votes and Bryan, 19,812 votes. In 1896 McKinley received 37,437 votes and Bryan, 14,459 votes. Thus McKinley's plurality was diminished from 22,978 in 1896 to 13,972 in 1900.

State Officers and National Representatives.—State officers for 1900: Executive—governor, Elisha Dyer; lieutenant-governor, W. Gregory; secretary of state, C. P. Bennett; attorney-general, W. B. Tanner; general treasurer, W. A. Read; adjutant-general, F. M. Sackett; auditor, C. C. Gray; superintendent of education, T. B. Stockwell—all Republicans.

Supreme Court: Chief justice, C. Matteson; associate justices, J. H. Stiness, Pardon E. Tillinghast, George A. Wilbur, Horatio Rogers, W. W. Douglas, and E. C. Dubois; clerk, B. S. Blaisdell—all Republicans.

State officers for 1901: Governor, William Gregory; lieutenant-governor, C. D. Kimball; secretary of state, C. P. Bennett; attorney-general, W. B. Tanner; treasurer, W. A. Read; adjutant-general, F. M. Sackett; auditor, C. C. Gray; commissioner of public schools, T. B. Stockwell; commissioner of insurance, C. C. Gray—all Republicans.

Supreme Court: Same as for 1900 except that J. H. Stiness replaces C. Matteson as chief justice, and J. T. Blodgett replaces Stiness as associate justice.

Congressional representatives for 1900 (56th Congress): Melville Bull (Middleton) and A. B. Capron (Smithfield)—both Republicans.

Congressional representatives for 1901 (57th Congress): Same as for 1900.

Senators for 1900 (56th Congress): G. P. Wetmore (until 1901) and N. W. Aldrich (until 1905)—both Republicans.

Senators for 1901 (57th Congress): Nelson W. Aldrich (until 1905), from Providence, and G. P. Wetmore (until 1907), from Newport—both Republicans.

RHODESIA, an immense tract of British territory in South Africa, is under the administration of the South Africa Company. Rhodesia extends from Bechuanaland and the Transvaal on the south to the Congo Free State and German East Africa on the north; to the east are the Central Africa Protectorate (British), and Portuguese East Africa, and to the west are Angola (Portuguese) and German

Southwest Africa. The term British Central Africa is often applied to Northern Rhodesia. The country is divided by the Zambezi into Northern Rhodesia and Southern Rhodesia, the latter comprising the provinces of Mashonaland and Matabeleland. The total estimated area is about 750,000 square miles, that of Northern Rhodesia being 575,272 square miles, Mashonaland 114,000 square miles, and Matabeleland 60,728 square miles. The two latter provinces have been estimated to have about 270,000 and 155,000 inhabitants respectively. The number of inhabitants in Northern Rhodesia is absolutely unknown, but has been estimated roughly at about 1,000,000. Northern Rhodesia has been under two British administrators—one for the northeastern part of the country, with headquarters at Fort Jameson, and the other for the northwestern part, with headquarters at Lialui, in Barotseland. In September, 1900, however, by an order in council a protectorate was proclaimed over Barotseland. This territory is bounded by the Zambezi river, German Southwest Africa, Portuguese West Africa, the Congo Free State, and the Loengi, or Kafukwe river. According to a provision of the order the protectorate will be governed by officials nominated by the British South Africa Company, and confirmed by the high commissioner of Cape Colony.

Southern Rhodesia is under an administrator for Mashonaland—called the senior administrator—resident at Salisbury, and an administrator for Matabeleland, resident at Buluwayo. These officials are assisted by an administrative council of seven members and a legislative council of eleven members; of the latter, there are two elected members for each of the two provinces. The commercial centre of Rhodesia is Buluwayo, a town with some 7500 white inhabitants and the terminus, in 1900, of the Cape-to-Cairo Railroad. In both Buluwayo and Salisbury are churches, schools, clubs, hotels, daily newspapers, parks, and public hospitals. Centres of increasing white population are Umtali, Gwelo, Gwanda, Selukwee, Victoria, Hartley, Abercorn, Tuli, Enkeldoorn, and Melsetter. Extensive mineral deposits, especially copper, occur in Northern Rhodesia. Timber and the rubber tree are abundant. Southern Rhodesia is also rich in minerals, among which are gold, silver, copper, tin, lead, iron, antimony, arsenic, and coal. The gold production during the year ending May 31, 1900, was 65,000 ounces, and the prospects of a large annual gold output are very favorable. It is stated that Southern Rhodesia is the ancient land of Ophir, and that traces of the ancient gold-workers have been found. The agricultural products include cereals, tobacco, indigo, and cotton. In 1900, experts sent out by the British South Africa Company investigated the Rhodesian coal fields lying some 180 miles northwest of Buluwayo, and their report, made known in December, confirmed the original statements concerning the richness and extent of the deposits. The fields cover at least 400 square miles, and the estimated amount of coal available, after making an allowance of 20 per cent. for loss, is 1,500,000,000 tons. As the coal lies about 40 feet beneath the surface, the seams, which vary from 5 to 16 feet in width, will be worked by means of inclines instead of shafts. The quality varies, but it apparently is better in general than that of the coal used in Cape Colony, Natal and the Transvaal, while some seams are said to equal the best Welsh coal. On account of this confirmation of the value of the deposits, it was thought the Cape-to-Cairo Railroad might be extended through the middle of the coal region, and then to Victoria Falls on the Zambezi. The survey of this line was nearly completed at the end of 1900, and it was thought that the work of construction would soon begin. For an account of the progress of the railway and telegraph in Rhodesia, see the article CAPE-TO-CAIRO RAILWAY.

RICHARDSON, Mrs. ABBEY SAGE, an American author, died December 5, 1900, at the age of 63. She acted with Edwin Booth for a time previous to her marriage with Albert Deane Richardson, a well-known correspondent for the *Tribune* during the Civil War. Her literary work includes: *Familiar Talks on English Literature* (1881); *Old Love Letters* (1883), and *Abelard and Heloise: A Mediæval Romance, with the Letters of Heloise* (1884). She wrote *The First Gentleman of Europe*, played at the Lyceum Theatre, New York; *A Colonial Girl*, and an adaptation of the *Pride of Jennico*. She was also a popular lecturer and a frequent contributor to magazines.

RIDPATH, JOHN CLARK, historian, died July 31, 1900. He was born on a farm in Putnam County, Ind., in 1841. Both his parents came from Virginia, his mother being descended from Samuel Matthews, a colonial governor of that State. He supplemented a district-school education with wide reading. He served as teacher in such a school before going to the pioneer college at Greencastle, which afterward by his efforts became De Pauw University. In 1869 he became professor of English literature in this institution, and was afterward vice-president and professor of history and political economy. Meanwhile, he was becoming known as an author. His first work, an *Academic History of the United States*, was published in 1875, and was very widely read. The work, abridged into a *Grammar School History*, was a famous text-book for over twenty years. At the time of the Centennial of 1876

Dr. Ridpath met a demand for an intelligent and well-written history for the masses with his *Popular History of the United States*. It achieved an immense sale, and was translated into German. In 1881, the same year that he published *The Life and Works of Garfield*, he became editor of the *People's Cyclopadia*. The *History of the World* (4 vols., 1885) rivalled his preceding books in popularity. In 1885 Dr. Ridpath resigned his professorship to devote his time to literary labor, and especially to his greatest effort, *The Great Races of Mankind*, a work which marks the author as one of the most popular historians of the country. His last work was a *History of the United States* in eight volumes, which was completed shortly before his death.

ROBERTS, BRIGHAM H. See UTAH (paragraph Roberts's Debarment from Congress).

ROBERTS OF KANDAHAR AND WATERFORD. See TRANSVAAL.

ROCKHILL, WILLIAM WOODVILLE, was appointed special commissioner to China in July, 1900, when the fate of United States Minister Conger (*q.v.*), as a result of the Boxer uprising (see CHINESE EMPIRE), was still in doubt. From 1897 until April, 1899, when he retired, he was United States minister to Greece, Roumania, and Servia. Mr. Rockhill was chief clerk in the United States State Department in 1893-94, and in President Cleveland's second administration was assistant secretary of state. He was one of the Gold Democrats to support Mr. McKinley in 1896.

ROMAN CATHOLIC CHURCH. The year 1900, which had been proclaimed a "Holy Year," or year of "Universal Jubilee," has been one of unusual interest. The "Holy Year," announced by papal decree as extending from December 25, 1899, to December 25, 1900, was inaugurated by the opening of the *Porta Santa*, an event which had created the most profound expectancy on the part of the whole Catholic world. The holy door is one of the five doors of the basilicas of St. Peter, St. Paul, St. John Lateran, and St. Mary Major in Rome. In the celebration for the opening of the jubilee, the Pope presides at St. Peter's, while three cardinals are delegated to perform the service at the other churches. Thousands came to see this impressive ceremony, which was carried out without a disturbing feature to mar the solemn rites, and amid a religious splendor unknown outside of Italy or France. The year was marked by the canonization of Jean Baptiste de la Salle, founder of the Christian Brothers. In November the Pope issued an encyclical on "Jesus Christ the Redeemer of the World," addressed to the prelates of the universal church.

United States.—In the United States the Roman Catholic Church is the oldest, as well as the largest Christian denomination. The earliest church dates its origin shortly after the founding of St. Augustine, Fla., in 1565, and the first diocese, that of Baltimore, was established 1790. Estimates of the Roman Catholic population vary, but a conservative estimate places the number at 8,610,226, with 11,636 priests, and 12,062 churches. The total number of Roman Catholics in the world is given at over 230,000,000, of whom less than one-tenth belong to English-speaking nations. The hierarchy in this country, which is one of the largest in the church, consists of the Apostolic Delegation, Monsignor Sebastien Martinelli, papal legate; Rev. Francis Marchetti, auditor; and Rev. F. Z. Rooker, D.D., secretary; 1 cardinal archbishop, 13 other archbishops, and 78 bishops. (For the College of Cardinals, see CARDINAL.) In the United States alone, the Roman Catholic Church controls 10 universities, 30 secular seminaries, with 2630 students; 79 religious seminaries, with 1908 students; 178 colleges for boys, 662 academies for girls, and 3811 parish schools, with 854,523 pupils. An event of importance early in the year was the decision of the Sacred Congregation of the Propaganda that the Christian brothers in their American institutes return to the primitive observance of their rule, which forbids the teaching of Latin and Greek. The dispute has lasted some time, and its settlement, while regarded as technically just, has been condemned as being against the best interest of Catholic affairs in America, for the work has gained some degree of efficiency, a result of many years of experience. The refusal of Harvard University to admit graduates of Boston College to its law school while accepting those of Georgetown University gave rise to a controversy. See UNIVERSITIES AND COLLEGES.

On November 22 occurred the dedication and formal opening of Trinity College, Washington, D. C., by His Eminence Cardinal Gibbons, archbishop of Baltimore. The institution is devoted to the higher education of women, and its standing is intended to rank with any girls' college in America. Among other events of the year may be noted the Golden Jubilee celebration of St. Patrick's, Newark, N. J.; the annual conference of Catholic colleges in the United States at Chicago (see CATHOLIC COLLEGES OF THE UNITED STATES, CONFERENCE OF THE); the Golden Jubilee of the diocese of Savannah, when the new cathedral was dedicated by His Excellency Archbishop Martinelli; and the congress of Roman Catholic societies at Cincinnati in the interests of federation.

The religious problem in the Philippines has continued to provoke great comment.

but with all the discussion its solution appears to be far distant. In actual results the mission of Archbishop Chapelle (*q.v.*) to adjust the altered relations of church and state has proved somewhat of a disappointment. The question of expulsion of the friars, who are strenuously opposed by the Filipinos, and the disposition of church property, is intimately connected with the pacification of the island; yet the natives are devout Catholics, and what may be done to satisfy them, and yet preserve the terms of the treaty, remains an unsolved enigma. In Cuba has arisen another difficult situation. Besides problems relating to church property and marriage laws, that of education needs careful and dispassionate consideration. The population of Cuba is almost exclusively Roman Catholic, and while, under existing conditions, a separation of church and state is the only status possible, there is no reason, it is asserted, why religious instruction should be barred from the school-room, and Roman Catholics would undoubtedly object to such an act. The appointment of Monsignor Sbarretti as bishop of Havana, late auditor of the Apostolic Delegation at Washington, was received with great opposition by the Cuban party, which desired the appointment of a native. This opposition, however, appears to be subsiding in general acquiescence to the wisdom of the selection. The acknowledged ability and tact of Monsignor Sbarretti, it is confidently expected, will be of great influence in reconciling existing anomalies.

Foreign Countries.—During the year considerable attention has been directed to an "away from Rome" movement, which, at first confined to German provinces, gradually gained influence among the Slavs and Czechs, and attained its greatest strength, so it is said, in France and Austria, where it attracted many adherents, while an opposite movement in France has been almost overlooked. The trial and condemnation of twelve Assumptionist fathers in Paris on charge of maintaining an illegal association naturally occasioned some discussion as to the unjustness of the judgment. The fathers have not lacked defenders, who believe the action of the government was instigated by a desire to satisfy the anti-clerical element and who minimize the seriousness of the crime, citing in proof the smallness of the attached penalty. Still the Assumptionist organ, *La Croix*, which is the expression of an agitative and subversive policy, has given just grounds for many charges, and, with its immense circulation (a quarter of a million), exerts a dangerous influence, which can be easily understood. (See FRANCE, paragraph The Ministry and the Congregations.) In England, more than ordinary interest has been centred in the controversy between Professor St. George Mivart and the church, represented by His Eminence Cardinal Vaughan, archbishop of Westminster. The views held by Professor Mivart, who was recognized as one of the most eminent scientists in England, were at decided variance with the dogma of the Roman Catholic Church, and called forth bitter criticism from the Catholic press. When opportunity was given, Professor Mivart refused to withdraw his position, and his excommunication followed shortly afterward. (See MIVART, ST. GEORGE.) The year marked the fiftieth anniversary of the re-establishment of the Roman Catholic hierarchy in England. On September 24, an International Catholic Scientific Congress met at Munich; somewhat later German Catholics held their forty-seventh annual congress at Bonn, a feature of which was a tendency toward closer bonds between the Emperor and his Catholic subjects.

Missions.—In the conduct of foreign missions, the French have by far the largest part. The total number of persons engaged in the work is about 60,000, including representatives from 100 to 120 congregations, of which Benedictines, Capuchins, Dominicans, Franciscans, Jesuits, Lazarists, and Trappists furnish the most representatives. Of this number, 44,000 are women, among whom the proportion of French workers to the total is correspondingly great. Besides the regular orders, there are two or three thousand secular priests and a large band of natives engaged in the work. The yearly receipts for the propagation of the faith amount to nearly 7,000,000 francs, of which France contributes over 4,000,000.

RÖNTGEN RAYS IN SURGERY. An immense number of Röntgen ray, or X-ray, pictures have been made during 1900, to verify or determine diagnoses of fracture, sprains, foreign bodies, dislocations, etc. In many cases problems were solved, in many the skiagrams were inconclusive. A committee of the American Surgical Association, appointed in 1897, reported in May, 1900, on the medico-legal relations of the X-ray. The members of the committee report that many mistakes have been made regarding the presence or absence of fracture; that defective plates lead to many errors; that X-rays should not be employed as a routine practice, but that the surgeon should employ all the trustworthy methods of experience; that skiagrams of the skull, the vertebral column, the pelvis and the hips are far from satisfactory; that inferences can be drawn from skiagrams only by those who are familiar with their appearances, their distortions and the relative values of their shadows and outlines. It was unanimously agreed by the members of the association,

at which the report was read, that the association does not sanction the X-ray as a part of expert evidence. The Röntgen Society of America held its first meeting in New York City, December 13 and 14, 1900. Papers were read on the application of skiagraphy and an exhibition was given of apparatus and skiagrams. The president of the society is Dr. Heber Robarts, editor of *The X-ray Journal* of St. Louis; the secretary is Dr. J. Rudis-Jicinsky, of Cedar Rapids, Ia.

ROSE, SOCIETY OF THE. See **RUSKIN SOCIETY OF LONDON.**

ROSTAND, EDMOND. See **DRAMA.**

ROUMANIA, a kingdom of southeastern Europe, is situated between Austria-Hungary, Russia, and Bulgaria. Its area is stated at 48,307 square miles, and the population was estimated in 1899 at 5,912,920, of which only 18.8 per cent. live in the cities. The capital of the kingdom is Bucharest, with a population of 280,000 in 1899. Though the most progressive of the lower Danube states, Roumania depends mainly on its agriculture, as can be seen from the fact that 85.25 per cent. of the total exports for 1898 consisted of cereals and 2.5 per cent. of fruits and vegetables. The year 1899 was one of the most disastrous Roumania has experienced for a long time. The failure of the principal crops was sufficient to cause a commercial panic in a country where by far the largest part of the population follow agriculture for a living.

The official returns for the foreign commerce of Roumania for 1898 give the exports and imports as 283,181,567 and 389,908,439 francs respectively, against 224,179,690 and 355,782,804 francs in the preceding year. Over 90 per cent. of the exports consist of agricultural products. The budget of Roumania for 1900 balanced at 228,805,000 francs, against 222,095,000 in 1899 and 101,357,605 francs in 1894. The revenue is derived chiefly from direct and indirect taxes, monopolies, and state domains. The public debt at the end of the fiscal year 1899 amounted to 1,292,240,030 francs. All the railway lines of Roumania are owned and operated by the state. The total length of lines open to traffic at the end of 1900 was 1932 miles, against 1895 miles in 1898. There were also 72 miles under construction and 360 miles being surveyed. The navigation on the Danube during 1899 has decreased considerably, a fact due mainly to the failure of the crops. The number of vessels cleared during the year was 1056, with an aggregate tonnage of 1,070,367, against 1419 vessels, with a tonnage of 1,476,119 in 1898. The state religion of Roumania is Greek Orthodox, and is professed by about 5,000,000 persons out of a total population of 5,912,920. Education is still very backward, although very large sums are devoted to it by the government. Two universities at Bucharest and Jassy have an attendance of 2210 and 420 students respectively. Military service is compulsory for every male Roumanian between the ages of 21 and 46 capable of bearing arms. The term of service in the active army is 3 years. The annual contingent of conscripts is between 28,000 and 30,000 men. The peace strength of the active army is 3089 officers and 44,400 non-commissioned officers and men. The total war strength is given as 3940 officers, 167,316 men, 52,604 horses, and 384 guns. The navy of Roumania consists of 21 vessels, including 1 protected cruiser and 6 torpedo boats. Roumania has a constitutional form of government. The legislative power is vested in the Senate and the Chamber of Deputies, although the king has a suspensive veto over all laws passed by them. The Senate consists of 120 members, elected for 8 years, and the Chamber of Deputies has 183 members, elected for 4 years. The electoral franchise is limited, the whole tax-paying male population being divided into 3 colleges, according to their property or educational qualifications. The executive power is vested in a council of 8 members, with the prime minister as president. For purposes of local administration Roumania is divided into 32 districts, which are subdivided into *arrondissements* and *communes*. The political status of Dobruja differs from that of Moldavia and Wallachia in that it does not elect any senators or deputies.

History.—The persecution of the Jews, which has always been a more or less prominent feature in the social and political life of Roumania, became especially conspicuous during 1900. The failure of the crops and the resulting dissatisfaction among the agricultural population, together with the renewal of the "ritual murder" accusations against the Jews in Prussia and Austria-Hungary, gave a new stimulus to the cause of anti-Semitism in Roumania. The total number of Jews in Roumania is in the neighborhood of 260,000, and of this number not more than 1000 are recognized as citizens, although the burden of taxation is borne by all the Jews alike. With regard to education, the Jews in Roumania are at an even greater disadvantage than their coreligionists in Russia, for while in the latter country the admission of Jews to the secondary and higher educational institutions is restricted to a small part, the Roumanian government has practically excluded the Jews from every educational institution maintained by the state. Moreover, in certain instances the government has closed schools maintained by the Jewish communities at their own expense, by declaring unconstitutional the tax levied for that purpose and voluntarily

imposed by the Jews themselves on articles exclusively used by them. As a result of the incessant persecution, the Jewish emigration from Roumania during the last year has increased to an enormous extent. While the bulk of the emigrants turn to the United States as a refuge, a considerable number have also settled in Brazil, Cyprus, and Turkey. At the close of the year Premier Carp was reported to have taken some measures toward ameliorating the condition of the Jews in Roumania; but it may be doubted whether any reforms, even if attempted in good faith, would be effective in a country where the sentiment against the Jews is so strong and deeply rooted as it is in Roumania.

The financial situation in Roumania is becoming very grave, and the government is being continually urged to curtail its expenses; but as yet the government has not taken any steps in that direction, and in order to avoid a deficit for the past year, it was compelled to part with a considerable portion of the national bank stock and its forests to the amount of 43,000,000 francs. The situation is still more aggravated by the fact that Germany, the old creditor of Roumania, does not seem to be very anxious to give further financial accommodation, while the impaired credit of Roumania makes it extremely difficult, if not impossible, to float a loan elsewhere. In the latter part of the year the Senate passed a commercial convention with Greece by a vote of 73 to 12. For foreign relations of Roumania, see BULGARIA.

ROWING. The annual races of the Intercollegiate Rowing Association were held as usual on the Hudson River, at Poughkeepsie, June 29 to July 2. The eight-oared 'varsity' race, four miles, was won by Pennsylvania, 19.44½; second, Wisconsin, 19.46¾; third, Cornell, 20.04¼; fourth, Columbia, 20.08¾; fifth, Georgetown, 20.19½. The eight-oared freshman race, two miles, was won by Wisconsin, 9.45¾; second, Pennsylvania; third, Cornell; fourth, Columbia. The four-oared 'varsity' race, two miles, was won by Pennsylvania, 10.31½; second, Columbia; third, Cornell. A larger number of crews took part in the eight-oared 'varsity' race than in sixteen years, when Pennsylvania, Cornell, Princeton, Columbia, and Bowdoin rowed at Saratoga Lake in 1884. It is announced that in 1901 six crews will compete in this race, Syracuse entering for the first time. Georgetown was a new factor in college rowing in 1900 and placed a surprisingly good crew on the water. The race was one of the fastest and most exciting seen in some years, Pennsylvania, Cornell, and Wisconsin rowing abreast to the three and a half mile point. This is the third successive year that Pennsylvania has defeated Cornell, after the latter had twice easily defeated Yale and Harvard and after her crews had defeated Pennsylvania year after year. The Harvard-Yale races were held at New London, Conn., June 28. Yale won the eight-oared 'varsity' race, four miles, in 21.12¾; Harvard won the eight-oared freshman race, two miles, in 12.01, and the four-oared 'varsity' race, two miles, in 13.22. The captain of Harvard's 'varsity' crew, who was one of the best oars in the boat, was injured shortly before the race, making the victory of Yale less satisfactory than would otherwise have been the case. The annual regatta of the National Association of Amateur Oarsmen was held on the Harlem Speedway Course, New York City, July 19 to 21. It was chiefly interesting for the fact that the contest was held to decide the American representatives for the international boat races at Paris. E. H. Ten Eyck, of the Wachusett Boat Club, won the single sculls, but fouled John Rumohr in doing so, and the next day absented himself from participating in the national single scull championship, which was won by Rumohr on default. Considerable was said during the year against the amateur standing of both these rowers. Ten Eyck did not represent the Association at Paris owing to the refusal of the latter to pay for the passage and expenses of his father and a trainer to and from France. The races to decide the contestants in the eight-oared event in Paris were won by the Vesper Boat Club, which went to Paris soon after and easily won the eight-oared Exposition championship by four lengths over crews of Ghent, Amsterdam, Hamburg, Paris, etc. The absence of English crews was a disappointment to the American oarsmen. The United States Naval Academy cadets as usual rowed several races with college crews, defeating the Yale freshmen, two miles, in 10.10, and being beaten by the University of Pennsylvania 'varsity' crew, two miles, in 10.36¾. The Naval cadet freshmen beat a University of Pennsylvania crew, one and a half miles, in 8.11. Abroad, B. Hunting Howell, an American student at Cambridge, who had for two successive years captured the Winfield sculls, which represents the championship of Great Britain, and the Diamond sculls of the Henley Regatta, and who holds the records for these events, was defeated in both contests. In 1901 the United States will again be represented at the Henley Regatta, as a University of Pennsylvania crew will compete for the Grand Challenge Cup in eights.

ROYAL ACADEMY, LONDON (Burlington House, Piccadilly), founded 1768 by George III. for the maintenance of a free academy of art and the holding of annual

exhibitions, open to artists of distinguished ability. In 1900 there were 39 royal academicians and 4 retired and 30 associates and 4 retired.

ROYAL ARCH MASONS, the seventh degree in Masonry, reported for 1900, 44 grand chapters, each representing a State or Territory (except Pennsylvania and Virginia), and 2426 subordinate chapters, with a total membership of 193,194. There are, besides, 21 subordinate chapters in the Territories of the United States, the Sandwich Islands, Chile, and the Chinese Empire, which are under the immediate jurisdiction of the General Grand Chapter. General grand high priest, James W. Taylor, Luthersville, Ga.; general grand secretary, Christopher G. Fox, Buffalo, N. Y.

ROYAL SOCIETY, London (Burlington House, Piccadilly), a world-renowned society, formed in 1660 for the promotion of scientific investigation. It has about 500 fellows and 50 foreign members. It has afforded assistance to many expeditions and researches, and published a vast amount of literature, which includes some celebrated works. It awards the Copley medal, which has been received by many of the famous scientists of the world, two royal medals, and the Rumford, Davy, Darwin, Buchanan, Sylvester, and Hughes medals. The library contains about 50,000 volumes and many busts and paintings. The society has published its *Philosophical Transactions* since 1665 and its *Proceedings* since 1800.

RUBBER. Each year rubber is more extensively employed for electrical purposes, and during 1900 it was used by the United States government in place of gutta-percha as a coating for submarine cables laid among the Philippine Islands. The manufacture of bicycle tires has enormously increased the demand for rubber and also its price. According to the *Bulletin* of the Bureau of American Republics, the annual production of rubber in the world is 57,500 tons, of which 21,000 tons are used in the United States and Canada and 21,000 tons in Great Britain, most of that imported into the United States being in the crude form. The chief producers are: The Amazon district, 25,000 tons; the rest of South America, 3500 tons; Java and Borneo, 1000 tons; East and West Africa, 24,000 tons; Madagascar and Mauritius, 1000 tons; India, Burma, and Ceylon, 500 tons. While the annual demand for rubber is rapidly increasing, the world's product seems perfectly able to keep pace with this increased demand. India-rubber forests of vast extent have within a year or two been discovered in Bolivia, including new species of the tree heretofore unknown. The fact is not generally known that india-rubber is not the product of a single species of trees, but is produced by a great variety of trees and plants, some of which require a moist soil and atmosphere, while others will thrive in a stony soil with only an intermittent rainfall. Hence, in tropical regions the possibility of procuring sufficient quantities seems endless.

The following additional statistics are also taken from the *Bulletin* already named, and relate to the United States: In 1899 there were imported 51,063,066 pounds, at an average cost of 62.1 cents per pound; and in 1900, 49,377,138 pounds, at an average cost of 63.1 cents per pound. The rubber imports for the last decade have been valued as follows:

1891.....	\$18,020,084	1896.....	\$16,781,533
1892.....	19,833,090	1897.....	17,558,163
1893.....	17,964,667	1898.....	25,545,391
1894.....	15,162,333	1899.....	31,875,207
1895.....	18,475,382	1900.....	31,555,483

RUBY MINES. See GEMS.

RUSKIN, JOHN, M.A., D.C.L., LL.D., the great English art critic and social reformer, died on January 20, 1900, at Brantwood, Coniston Water, Lancashire. Eighty-one years before—on February 8, 1819—he was born in London. His rearing was sheltered, Scottishly severe, yet of a liberal culture; mostly ignorant of toys, yet wise in acquaintanceship with Byron and Wordsworth, Addison and Scott. At 4 he read and wrote; at 5 was confirmedly bookish, and at 6 manufactured volumes of his own with laborious imitation of print. His foundation in art was due to J. D. Harding and Copley Fielding, and when in 1835 he entered print with a series of geological essays for the *Magazine of Natural History*, he was able to add requisite illustrations. After various and fragmentary tuition, he in 1837 took up residence as gentleman-commoner of Christ Church, Oxford, where he graduated B.A. in 1842. It was in 1843, with the publication of the first volume of *Modern Painters*, that Ruskin formally began his activities in criticism. *Modern Painters* was not completed until 1860, but meanwhile appeared *Seven Lamps of Architecture* (1849) and *The Stones of Venice* (1851-53). In 1851 Ruskin forwarded to the *Times* the famous letter in defence of the Pre-Raphaelite Brotherhood, then an obscure group of youthful artists purposing a return to that nature from which they held the Florentine first to have departed. This letter, followed during the same year by the



JOHN RUSKIN AND THE RUSKIN HOME. Digitized by Google

volume *Pre-Raphaelitism*, of course induced against him a running fire of ridicule. In 1853 he pronounced by invitation before the Philosophical Society of Edinburgh four lectures on architecture and painting.

The year 1860 marks the trend from art toward social science. Of the *Unto This Last* articles—downright Carlylese at that time written from Switzerland for the *Cornhill*—but four were published; Thackeray, the editor, counselling discontinuance in fear for the magazine. *Sesame and Lilies* (1865) and *The Crown of Wild Olive* (1866), proceeding along the new lines, proved as to sales the most popular of their author's books. Having previously (1865) joined D. G. Rossetti and F. D. Maurice in the furtherance of the Workingmen's College, London, Ruskin was in 1867 elected Rede lecturer at Cambridge. In 1870 he was appointed to the Oxford chair of fine arts, founded the year before by Felix Slade. He filled the Sheldonian auditorium with unusual crowds, and, three times rechosen, at last resigned in 1879 only from a realization that to his auditors the intrinsic attraction was not his subject, but the fashion of his phrasing it. His lectures—such as *Aratra Pentelici*—he esteemed the closest-wrought of all his writings. His periodical, *Fors Clavigera*, he founded in 1871, continuing it until 1879. In 1871 he instituted St. George's Guild, a co-operative land-owning association as by himself advocated, upon which he made settlements aggregating £10,500. Not to be omitted is the memorable critique on the Whistler pictures (1877), with the consequent libel action by the aggrieved artist and the mock award of a farthing damages. In 1884 Ruskin was again lecturing at Oxford and, it is said, intended a public denunciation of vivisection as there practised. From this he was dissuaded by the authorities. But when, almost immediately thereafter, there were voted to vivisection funds denied his own department, he a second time resigned. Repeated attacks of illness, which had already so early as 1876 asserted themselves, made necessary for his later years the calm seclusion of his Brantwood home.

In personal appearance Ruskin was tall, thin, and stooping, with pronounced features of English cast—the blue eyes overhung by heavy brows. In character he was simple, impulsive, and sympathetic. Long before he died his generosity had dispensed an ample fortune. Trouble of health and cruel disappointments now and again badgered him into bitterness of heart, but could not dim his real graciousness. In addition to the St. George's Guild above referred to, his material benefactions were extensive. Besides important presents to both Oxford and Cambridge, he endowed the Taylorian galleries, Oxford, catalogued the silicas of the British Museum, established a linen industry at Keswick, and revived hand-loom weaving in Langdale. Perhaps his most valuable gift was that of St. George's Museum (first placed at Walkley, but in 1890 removed to Sheffield), which contains choice specimens of fine art, including rare books, missals, and casts, together with selected working collections in mineralogy and natural history.

John Ruskin's exclusive work in art criticism was introduced in 1842 with the preparation of *Modern Painters*; closed with the publication of *Unto This Last* in 1860. The period is marked by three pre-eminent contributions to æsthetics: the five-volume series of *Modern Painters*, *The Seven Lamps of Architecture*, and *The Stones of Venice*. These embodied as many predominant purposes. The first was to secure for Turner, then old and in neglect, a general attention and repute; so successfully realized as quite to embarrass that diffident landscapist and astonish Ruskin himself. The second was to assert, in opposition to the claims of Poussin, Claude, Canaletto, and the early Dutch school, the "excellence and supremacy" of Luini, Botticelli, Tintoret, and Carpaccio—"despised until I spoke of them." The third was the glorification of the Gothic. Ruskin's dicta concerning art were few, and not at all complex. True art, he said, is praise—the delight of a great soul in the object which it contemplates, and which with inspired unconsciousness it interprets to those of more imperfect understanding. True art serves useful ends, chiefly by enhancing pre-existent right moral conditions, and by making permanently visible much which must otherwise remain outside the range alike of science and of memory. Of Ruskin it was once said by William Morris that in all the nineteenth century he alone made art a possibility in England. And this, it is conceded, he accomplished because he was the first to place art-criticism upon a properly scientific basis.

It was the knowledge that many were barred from the beneficences of art that diverted Ruskin to social philosophy. The political economy of the time he found to be but a more or less superficial study of certain commercial phenomena. True political economy he believed to concern the maintenance of the largest number in a condition of happiness and efficiency. To attain this condition he would have the state assume toward its members a patriarchal relationship, superintending education, defining work hours, and determining wage. This system, with its extensive ramifications, has, as is well known, long been the scorn of professional economists. Yet more and more these latter are coming to confess the possibility of the ennobled-

ment of function through the influence of environment. In 1879 there was organized the Ruskin Society—originally known as the Ruskin Societies of the Rose—which, examining education, poetry, art, ethics, and much else, still flourishes in many large cities of the United Kingdom.

Of Ruskin's publications no particularized description could here be attempted. The excellent bibliography of R. H. Shepherd (London, 5th ed., 1882) is recommended.

For the details of his life his own delightful *Præterita* (1885-89) should be supplemented by the work by W. G. Collingwood (2 vols., 1893). Collingwood's *The Art Teaching of John Ruskin* (1891) is considered authoritative on the subject which it treats. For an account and analysis of Ruskin's social theories and labors, see Professor J. A. Hobson's *John Ruskin, Social Reformer* (1898). During 1900 a number of Ruskin studies were published. Among these may be mentioned the sketch by M. H. Spielmann, interesting for its personal reminiscences and anecdotal manner; Mrs. A. C. Meynell's critique, difficult in style and hazy in conclusions; M. Mather's work, which has been commended; the booklet by M. A. Ward in *Prophets of the Nineteenth Century* series, and the characteristic essay by F. H. Harrison in his *Tennyson, Ruskin, Mill, and Other Literary Estimates*. The German work, *John Ruskin, Sein Leben und Lebens-werk*, by Samuel Saenger, is excellent. It is announced that Ruskin's complete works are being translated into both French and German.

RUSKIN SOCIETY OF LONDON (Society of the Rose), organized in 1881 for the purpose of studying the works of John Ruskin and of diffusing by lectures and papers a knowledge of his teachings. An excellent library is possessed by the society and was largely the gift of Mr. Ruskin. Secretary, J. P. Smart, Jr., 5 Mount View Road, Crouch Hill, London, N., England.

RUSSELL, CHARLES ARTHUR, Baron Killowen, lord chief justice of England, was the most celebrated barrister of Great Britain at the time of his death, August 10, 1900. Born at Newry, Ireland, in 1832, he was educated at Trinity College, Dublin, and was a barrister's clerk at Belfast before going to England. In 1859 he was admitted to the bar, his earliest practice being on the Northern Circuit, with Liverpool as a centre. In 1872 he was appointed bencher of Lincoln's Inn and queen's counsel. In the general election of 1874 Russell was defeated, but in 1880 he entered Parliament as a Liberal for Dunkeld, and was one of Parnell's most active colleagues. In 1886, the year in which he was knighted, and again in 1892 Gladstone made him attorney-general. Contrary to custom, Lord Russell then gave up a large private practice. Upon the death of Lord Rowen in 1894 he was appointed lord of appeal in ordinary and a life peerage was conferred upon him. In the same year he succeeded Lord Coleridge as lord chief justice, being the first Roman Catholic since the Reformation to hold that position.

His forensic powers were exceptional, but, combined as they were with skill in cross-examination and shrewd common-sense, gave him first place in the law courts rather than in Parliament. He figured in a long list of celebrated cases. As leading counsel for Charles Stewart Parnell and the Irish members before the Parnell Commission, he caused a great sensation by exposing the Pigott forgeries in the *London Times*. In 1889 he defended Mrs. Maybrick in the celebrated murder trial. A prominent figure in England's international relations, he was one of the British counsel in connection with the United States fisheries arbitration case, and represented the British government on the international tribunal which dealt with the Venezuelan claims. His public service most admired in America is his advocacy of international arbitration. His address on this subject before the American Bar Association in 1896 ranks among the notable contributions to the discussion. Had he lived Lord Russell would undoubtedly have been appointed a member of the international tribunal constituted by the Hague convention.

RUSSIA, an empire comprising about 56 per cent. of the area of Europe and nearly 38 per cent. of Asia. Its total area as given in the census of 1897 is 8,660,395 square miles—2,095,616 in Europe and 6,564,778 in Asia. The population of Russia in 1897 was 128,932,173, which gives a density of population for the whole empire of 15 to the square mile. Of the total population, only 16,280,978 lived in towns, 100,087,849 dwelling in the country. At present the population of Russia is estimated at over 130,000,000. The chief cities of European Russia, according to the census of 1897, are: St. Petersburg, 1,267,023; Moscow, 988,614; Warsaw (Poland), 638,209, and Odessa, 405,047. In Asiatic Russia the largest cities are: Tiflis (Caucasus), 160,645; Tashkend (Turkestan), 156,414; and Baku (Caucasus), 112,253. The government of Russia is an absolute hereditary monarchy, the emperor wielding the legislative, executive, and judicial powers, and restricted in his rule only by certain precedents, such as the law of succession. The immediate administration of the empire is under

the control of four councils. The most important of them, the *Council of State*, consists of an unlimited number of members appointed by the emperor, and is divided into the four departments of legislation, civil and church administration, finance and industry, sciences and commerce. The *Ruling Senate* is invested with judicial and executive functions and is divided into six departments, two of which are Courts of Cassation. The functions of the *Holy Synod* are confined to the superintendence of ecclesiastical matters, and its membership is made up of church dignitaries. The fourth council is the *Committee of Ministers*, consisting of 12 ministers, who are at the head of the 12 government departments, and several grand dukes and ex-ministers. For administrative purposes the empire is divided into governments or provinces, which in turn are subdivided into districts. The governments are administered by governors, and some of them are united into circles (*okrugs*), such as those of Finland, Poland, etc., each of them administered by a governor-general, who in some cases is assisted by a council.

Emigration.—The emigration from Russia is chiefly to the United States; and, according to the latest report of the commissioner-general of immigration, the number of immigrants from Russia and Finland to the United States for the fiscal year 1900 was 90,787, against 60,982 in the previous year, an increase of almost 50 per cent. In regard to races, the immigrants from Russia were divided as follows: Hebrews, 37,011; Finns, 12,515; Poles, 22,500; Lithuanians, 10,207, and Russians, 1165. The migration to Siberia is also constantly increasing, and will undoubtedly become larger with the completion of the Trans-Siberian Railway and the abolition of the exile system.

Agriculture and Industries.—According to the figures of the central committee on statistics, the crops for 1900 were generally satisfactory, with the exception of a few governments in southern European Russia and in western Siberia. The crops of the principal grains were as follows: Rye, 1,415,388,000 poods, against 1,391,775,000 in 1899; wheat, 659,041,000 poods, against 619,317,000 in 1899; oats, 721,562,000 poods; barley, 309,475,000 poods; potatoes, 1,564,999,000 poods, against 1,473,807,000 in the previous year; hay, 3,008,991,200 poods, and beets, 7,039,994 tons. The pood is equal to 36.112 pounds. The exports of principal grains for 1901 are estimated as follows: Wheat, 170,000,000 poods; rye, 120,000,000 poods; oats, 75,000,000 poods, and barley, 60,000,000 poods. The output of distilled spirits for the fiscal year 1900 amounted to 86,075,142 gallons, against 74,692,297 in 1899. The sugar production for the current season is estimated at 1,950,000,000 pounds, against 1,800,000,000 pounds in the preceding year. The industrial progress of Russia has been marked during the last few years, and the imports of manufactured goods show a marked decline. The total production of cast iron during the calendar year 1899 was 163,105,811 poods, while the production of the same material for the first 6 months of 1900 amounted to 87,367,527 poods, against 80,751,399 during the same period in the preceding year. The output of coal during 1899 is estimated at nearly 13,000,000 tons, against 12,032,000 tons in 1898. But, in spite of the increase in the output, the import of coal from foreign countries is constantly increasing on account of the increased industrial activity and the construction of new railways. The government is fully aware of the gravity of the fuel problem, and steps are being taken to develop the vast turf fields of the empire. A commission, appointed by the ministries of agriculture and state domains for the purpose of examining the turf deposits of the empire and to inquire into the present state and needs of the turf industry, has recommended the following measures: The government to publish broadcast the results of the investigation for the benefit of private owners of turf lands; expeditions to be sent out by the government for the examination of private turf lands on request of the owners; to establish along the railway lines stations for the testing of turf samples; to rent the government turf lands on easy terms and for long periods, and to promote the turf industry by constructing railways in the turf regions, making loans and exempting from duty all machinery used in the turf industry. The output of petroleum in the Baku region (the centre of the petroleum industry of the empire) was 385,500,000 poods, against 393,000,000 poods in 1898. The prices of oil show a remarkable advance during the year 1899. Illuminating oil rose in price from a little over 10 cents per pood in January (at the wells) to more than 25 cents in December. This increase in the prices was mainly the result of the advance of prices of oil in the foreign countries, and especially in the United States.

Commerce and Navigation.—The official returns for the calendar year 1899 show a considerable decline in the commerce of Russia as compared with the preceding year. This decline is due mainly to the failure of the crops, and the decrease in the exports is confined chiefly to foodstuffs, which constitute more than 50 per cent. of the total exports of the empire. The figures for the first 10 months of 1900, however, show a marked increase over the same period in the previous year, and it may safely be presumed that the commerce for 1900 will be nearer to the level of 1898 than that

of 1899. The total exports for 1899 amounted to 601,600,000 rubles, against 708,900,000 rubles in the preceding year. The chief articles of export were: Foodstuffs, 317,000,000 rubles, against 433,400,000 rubles in the preceding year; raw and partly finished materials, 249,900,000 rubles; animals, 17,300,000 rubles, and manufactures, 17,400,000 rubles, against 20,300,000 rubles in 1898. The exports for the first 10 months of 1900 amounted to 569,936,000 rubles, against 496,108,000 rubles for the same period in the preceding year. The greatest increase is shown in the export of food products, which amounted to 324,334,000 rubles, against 261,574,000 for the same period in the preceding year, due chiefly to the improvement in the crops. The imports for the calendar year 1899 amounted to 594,000,000 rubles, against 562,000,000 rubles in 1898. By countries, the imports were as follows: Germany, 230,853,000 rubles in 1899, against 202,171,000 rubles in 1898; Great Britain, 129,353,000 rubles, against 114,082,000 rubles in 1898; United States, 43,749,000 rubles in 1899 and 50,052,000 in 1898. Thus, it will be seen that while the imports from Germany and France show an increase over those of 1898, the imports from the United States, on the contrary, have declined since 1898. The merchant marine of Russia is under the control of two departments, belonging to the ministry of finance, and is aided considerably by the government. The total number of vessels on the inland and exterior seas in 1898 was 5044, of which 995 were steamers, with a total tonnage of 428,551, and 4049 sailing vessels, with a total tonnage of 499,275. The total value of the steamships in the same year was \$41,612,000, while the value of the sailing vessels on the inland seas was estimated at \$7,929,918. Total amount of freight carried on the waterways of European Russia (excepting Finland, Poland, and Caucasus) during the calendar year 1899 was 1,883,687,000 poods, against 1,799,012,000 poods in 1898. The amount carried on the Volga alone was 956,000,000 poods, or about 50 per cent. of the total.

Postal and Telegraph Systems.—In 1898 there were in Russia 2117 postal-telegraph offices. The length of the government telegraph lines was 83,901 miles, with 522 stations. There were also 25,617 miles of telegraph lines belonging to private railway companies and 2706 miles belonging to private telegraph companies.

Railways.—Probably in no other line of economic activity has the progress of Russia for the last decade manifested itself more clearly than in the construction and acquisition of railways. In 1889, when the government inaugurated the policy of acquiring the railways, the total railway mileage of the empire was 18,204, of which 23 per cent. belonged to the state and the remaining 77 per cent. was owned by 42 private companies. In 1899 the length of the railways built and projected increased to 36,654 miles, of which the state owned 61 per cent., and 39 per cent. were under the control of 9 private companies. The extent to which the construction and acquisition of railways is carried on can be seen from the fact that the sums appropriated for the ministry of ways and communication have increased from 196,411,583 rubles in 1896 to 383,143,459 rubles in 1901, and that of total extraordinary expenditures of 321,539,795 rubles during 1899, about 50 per cent. was expended on the construction of new railways and the payment of obligations for lines already acquired. The total length of railways in operation on October 1, 1900, in European and Asiatic Russia (excluding Finland) was 32,588 miles, against 29,783 miles at the same period in 1899. Of the total length, the government owned 17,604 miles in European and 4716 in Asiatic Russia, while the private companies controlled 10,268 miles. The railways of Finland had a total length of 1694 miles at the beginning of 1900. The total gross receipts from the government railways for the calendar year 1899 amounted to 347,529,000 rubles, against 340,343,371 rubles in 1898. In February, 1900, a preliminary agreement was reported to have been made between Turkey and Russia, whereby the latter country obtained a concession to construct a railway from Kars, in trans-Caucasia, to Erzerum, in Armenia. Though later this report was denied, it was announced, however, that after obtaining the requisite concessions Russia proposed not only to construct this line, but to extend it to Sinope by way of Trebizond, and to connect the latter town with the Russian port of Batum by a railway along the eastern coast of the Black Sea. Russia also intended, it was said, to prolong the Kars-Erzerum line by a branch through Sivas to Angora, where connection will be made with the existing Turkish line, direct communication being thus opened between the Caucasus and the Bosphorus.

Finances.—The official returns for the calendar year 1899 give the revenue for that year at 1,673,313,062 rubles, an increase of 204,184,859 rubles over the expected revenue as given in the budget for 1899. The greatest increase is shown in the revenue derived from the excise on liquors, which amounted to 310,297,000 rubles, against 289,625,000 in 1898. The increase in the revenue from liquors is due to improved crops and also to the fact that the government sale of liquors was introduced in 15 governments in 1898 with the result that the consumption fell off and did not return to its former level until the following year. Next to the revenue from liquors the greatest increase is manifested in the receipts from the state railways,

which show an increase of over 35,000,000 rubles, as compared with the budget, and about 7,000,000 rubles, as compared with the receipts for 1898. The ordinary expenditures for 1899 were 1,463,572 rubles, against 1,462,659,233, as given in the budget. The extraordinary expenditures were 321,539,795 rubles, or 212,595,493 rubles more than was expected, according to the budget. This discrepancy is accounted for by the fact that nearly 200,000,000 rubles was expended on the refunding of bonds and over 5,000,000 rubles on the account of the preceding famine. The budget for 1901 is as follows:

	Rubles.
Ordinary revenue.....	1,730,096,006
Extraordinary revenue.....	1,500,000
Total.....	1,731,596,006
Free balance of treasury.....	56,886,000
Grand total.....	1,788,482,006
Ordinary expenditures.....	1,656,652,556
Extraordinary expenditures.....	131,829,450
Total.....	1,788,482,006
Chief sources of revenue:	
Direct taxes.....	127,172,905
Indirect taxes.....	652,310,800
Duties taxes.....	88,916,742
Royalties.....	227,999,900
State domains.....	465,335,362
Chief items of expenditure:	
Interest on public debt.....	274,909,743
Ministry of war.....	324,024,871
" " marine.....	93,597,666
" " finance.....	305,833,826
" " instruction.....	33,076,518
" " ways and communication.....	383,143,459
" " interior.....	87,650,199

A comparison of the budget for 1901 with that for the preceding year will show great increases in the appropriations for the ministries of finance and ways and communication and a slight decrease for the ministry of instruction. The state of the currency of the empire at the end of 1900 was as follows:

	Rubles.
Gold. { In state bank and treasury.....	807,800,000
" { " circulation.....	684,500,000
Standard { In state bank and treasury.....	58,400,000
Silver. { " " circulation.....	164,400,000
Bank-notes. { In state bank and treasury.....	77,700,000
" { " " circulation.....	552,300,000

Religion and Education.—The Græco-Russian, or Orthodox, Catholic Church is the national church of Russia; and, according to the census of 1897, over 80,000,000 people were Greek Catholics. The number of persons belonging to other churches is estimated as follows: Roman Catholics, 8,300,000; Protestants, 2,950,000; Jews, 3,000,000; Mohammedans, 2,600,000, and pagans, 26,000. The educational system of Russia is mostly under the control of the ministry of public instruction, but there are also many schools under the ministries of agriculture, interior, ways and communication, and holy synod. No definite figures for elementary education in Russia are obtainable, and the current statistics are mostly based on estimates. The number of universities in Russia is 9, with 4 faculties each and a total enrolment of 16,613 students in 1899-1900. There are also several schools of medicine, law, and 5 higher technical institutes, with an enrolment of 4000 students. For secondary education there were in June, 1899, 196 classical gymnasia, with 70,766 pupils; 117 *realschule*, with 34,056 pupils, and 44 *pregymnasia*, with 6869 pupils. Only the institutions for elementary education are coeducational, and the middle schools for girls are under a separate department. There were in 1898 nearly 200 gymnasia for girls and 176 *pregymnasia*, with an aggregate number of 80,000 pupils. There are also several

institutions for the higher education of women. The total number of elementary schools under the ministry of finance is estimated at over 27,000; under the ministry of war, 10,270, with 301,093 pupils, and under the holy synod, 12,970 schools, with 981,976 pupils. There were also 464 elementary schools supported entirely by owners of factories and mills and attended by 11,000 pupils. The total number of persons attending schools is estimated at 3,801,133, or 3 per cent. of the total population. Finland has a separate educational system, consisting of 1 university, with 2400 students; 1 polytechnic, 44 lyceums, and several other institutions for secondary education, besides a considerable number of primary schools. According to a United States consular report, the newspapers and periodicals published in Russia in 1900 were as follows: Russian, 631; Polish, 65; German, 42; Esthonian, 11; Latin, 9; French, 8; Armenian, 6; Caucasian, 5; Hebrew, 2; total, 779.

Army.—Military duty is obligatory for all males of over 21 years of age, with certain exceptions, which include teachers and clergymen. The term of actual service is 4 years in infantry and artillery and 5 years in cavalry regiments. In Asiatic Russia and Caucasasia the term of actual service is 7 and 3 years respectively. At the expiration of the term of service in the active army every soldier is kept in reserve up to the age of 43. The term of active service is shorter for graduates from gymnasia or universities. The active army of Russia on a peace footing in 1900 consisted of 612,150 infantry, 118,940 cavalry, 118,256 artillery, and 34,800 engineers, etc. The strength of the army on a war footing is estimated at nearly 4,000,000 men and over 7000 guns.

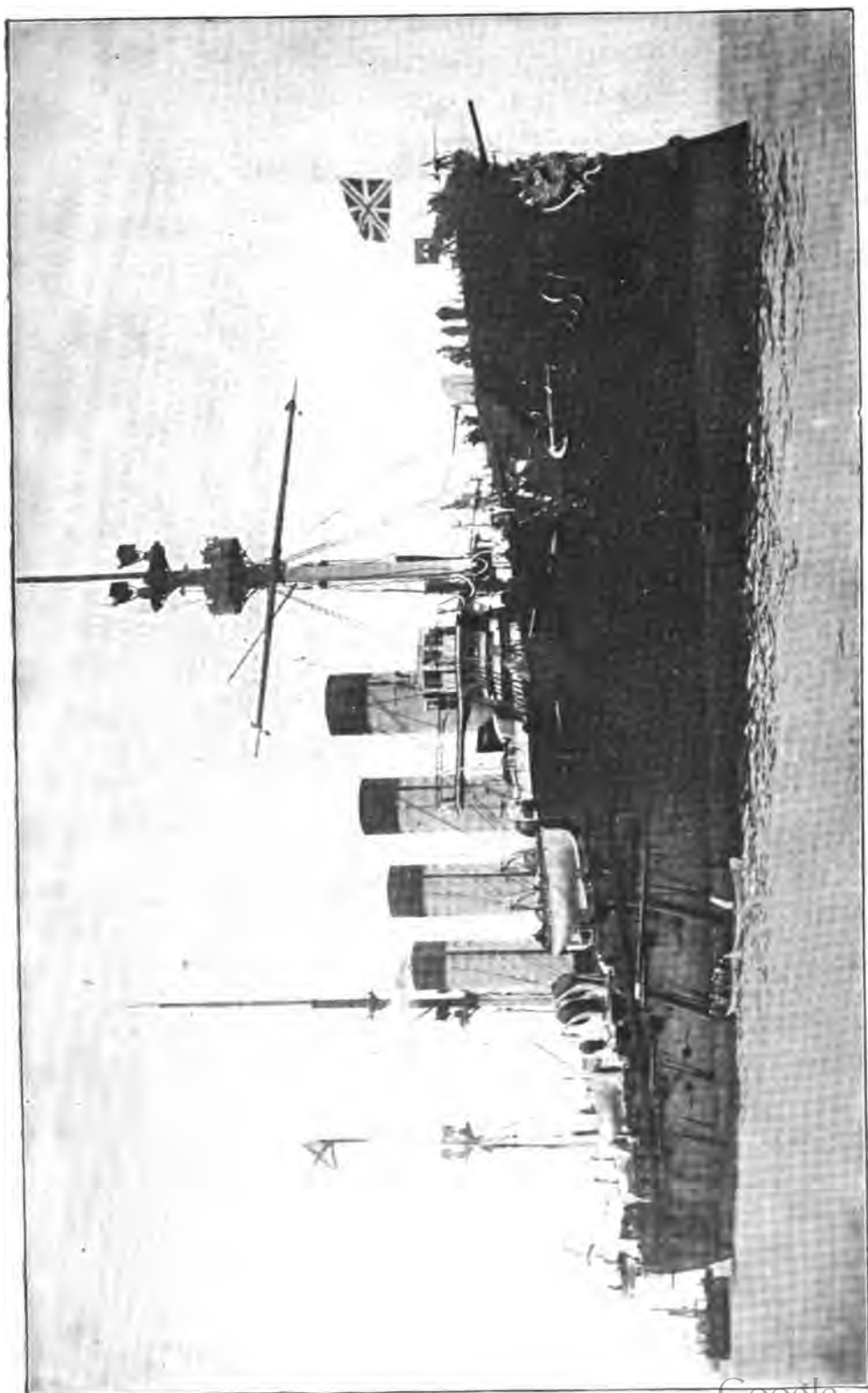
Navy.—The Russian navy consisted on December, 1900, of 6 battle-ships of the first class, 10 of the second, and 1 of the third class; 5 cruisers of the first class, 7 of the second, and 2 of the third class; 9 gunboats, 21 torpedo-boat destroyers, 16 coast-defence ships, and 81 first-class torpedo boats. There were also in the course of construction 7 first-class battle-ships, 10 cruisers of the first and 1 of the third class, 22 torpedo-boat destroyers, and 4 first-class torpedo boats.

In the latter part of 1900 the Russian squadron in the Far East comprised "6 large ironclads, 9 first and 2 second class cruisers, 7 ocean-going gunboats, 2 torpedo cruisers, 2 torpedo transports, and 10 torpedo boats—altogether 38 vessels, with 662 guns, 550 officers, and 11,534 men." It was announced that in 1901 the Russian fleet in the Pacific would comprise the following vessels: 7 ironclads—the *Retvisan* (which was built in America), the *Perestvial*, the *Askold*, the *Bogatyr*, the *Gromoboy*, and the *Baiane*, and the second-class cruiser *Novik*; 11 first-class cruisers, 3 second-class cruisers, 7 gunboats, 4 torpedo cruisers, and 10 torpedo steamers; in addition, there are 8 torpedo vessels at Port Arthur.

HISTORY.

Siberia.—Probably the most important events in the internal history of Russia in 1900 were the partial abolition of the Siberian exile system and the introduction of new prison regulations necessitated by the change. It had been recognized for a long time that the development of Siberia was being hindered by the transportation there of criminals, and in May, 1899, a commission was appointed to devise a scheme of penal reform. The commission was instructed to consider the advisability of substituting other suitable penalties for exile in the case of those judicially convicted; to discuss the expediency of limiting or entirely abolishing the system of administrative exile (exile by government authorities or the police without trial or specific accusation), and to devise measures for improving the condition of exiles already in Siberia. The results of the commission's labors were published in an imperial ukase of July 3, 1900, whose most important features were as follows: For most crimes and misdemeanors, imprisonment in penitentiaries or houses of correction was to take the place of exile. Transportation for political and religious offences was to be retained, but not necessarily to Siberia. In Siberia exiles were to be imprisoned and no longer allowed to settle in the country. The reason for continuing the transportation of political prisoners was, as one writer put it, the fact that their character was such as to make them a blessing rather than a curse to a new country. Between 1807 and 1899 it is estimated that 864,549 persons were exiled to Siberia, forming about one-sixth of the entire population. Of these, 159,000 were transported during the last twelve years. The effects of the new regulations on the prison system at home will be beneficial. The increased number of criminals to be provided for will necessitate radical reforms in penal administration. Over \$3,000,000 was appropriated in 1900 for the construction of new prisons. Important laws provided that released prisoners should all be restored to their civil rights, and directed rural communities to readmit after a fixed period members who had been expelled as dangerous to public security.

Economic and Financial Measures.—On January, 13, 1900, a government department of industry and commerce was created. The development of industry in Russia, and especially the expected development of Siberia, led to the step. On January



RUSSIA'S NEW CRUISER—*The Russia*.

1, 1900, a law went into effect excluding foreign vessels from the Russian coasting trade. The heavy expenses of the Chinese expedition led to an increase of 10 to 50 per cent. in the import duties. During the year the government converted the imposts on petroleum into a tax in kind, reserving 20 per cent. of the raw product for itself and going into business on its own account. In many industries, especially in sugar, the government showed itself in favor of centralization and the formation of what were practically trusts, controlled, however, by the authorities, who regulated prices and made the corporations quasi-governmental. The same tendency toward centralization is prominent in the railway policy of the government, which absorbed in 1900 the lines of several private railway companies. The policy of encouraging the immigration of capital from abroad was pursued during 1900, when many foreign industries, especially Belgian and English, were started. In spite of rapid economic growth, however, the condition of the populace, and especially of the agricultural classes, remained unhappy. During the last part of the year famine prevailed in the south of Russia. The government pursued active measures, remitted taxes, distributed food and seed, and encouraged emigration eastward into the unsettled provinces and Siberia. Speaking of the status of the industrial laborer in Russia, a writer in the *Novoye Vremya* pointed out that industrial development had not been accompanied by a corresponding improvement in the condition of the workmen. Factory towns had sprung up that were towns only in extent of population, but villages in the absence of streets, lighting, sanitation, or provision for the education and religious instruction of the inhabitants. Physical and moral wretchedness followed. The problems presented were difficult, requiring a long time for solution. Among the factory populations of Poland the socialistic movement assumed formidable dimensions. Strikes and lockouts were plentiful during the year and conflicts between the workmen and the police frequent. At Lodz, in southwest Poland, the police discovered the secret press of the *Robotnik* (*The Workman*), the Socialist official organ, and arrested five of the leaders. A new edition of the *Robotnik* appeared the same day, revealing the name of the man who had betrayed the party to the police, and the next day the informer was found murdered in the streets of the city. At the very end of the year great restlessness appeared among the students at the different universities. Discontent, caused by new rules, by the policy pursued by the government toward the striking workmen of southwestern Russia, and by the unhappy conditions generally prevailing among the peasants, led to the formation of secret student societies, and to threatening measures on the part of the government and the police.

Foreign Affairs.—Many newspapers in 1900 demanded that Russia take advantage of England's embarrassment in South Africa to advance her own interests in Asia. Officially such expressions of opinion were deprecated, but actually Russia did seize the opportunity to strengthen herself in Persia, in Asiatic Turkey, on the road to Afghanistan, in Thibet, Corea, and China. Under AFGHANISTAN, CHINESE EMPIRE, COREA, PERSIA, TURKEY, will be found the details of Russian foreign policy during the year; here it is enough to call attention to the following facts: By the massing of troops and the mobilization of her Black Sea fleet, Russia obtained from the Porte a valuable railway concession in Asia Minor around Erzerum; in Persia, a loan to the shah of 22,500,000 rubles by the Russian Bank of Loans and the pledging in return of the country's customs and the tolls of the southern provinces have resulted in substituting Russian influence for British in both politics and trade, and must lead to the entrenchment of Russia on the Persian Gulf; the rushing of troops across the Caspian put England and India in great fear of a hostile advance on Cabul; a treaty with the grand lama of Thibet established Russian predominance on the northeastern border of India; Russian generals in September were establishing provisional governments in the conquered districts of Manchuria. The concession of a coaling station at Ma-sampho in Corea has opened another Russian port on the Yellow Sea, and was an additional cause of irritation to Japan. This advance, it is thought, was inevitable, as Russia has been forced to spread in all directions, and she is pressing on her European frontiers as well as on her Asiatic boundaries. In the Balkan states, and, to a less degree, in Galicia, Russian plans and schemes have become manifest. Though the advance is slow it is believed to be sure. Speaking of a possible partition of Afghanistan and Persia by Russia and England the *Novoye Vremya* declared that the plan was against the interests of Russia, as that country would not be satisfied with half when by waiting it could, bit by bit, get all. The death of Muravieff (*q.v.*), minister of foreign affairs, was considered unlikely to change the external policy of Russia. Brilliant diplomatist though he was, Muravieff had no personal inclination, but acted as the obedient servant of the czar. His assistant and successor, Count Lamsdorff, was said to have been the real head of the foreign office, the man behind the minister. For Russia and the French alliance, see FRANCE. For a most important event in internal politics, the Russification of Finland, see FINLAND.

RUSSIAN LITERATURE. History and Biography.—It is twenty years since E. E. Golubinski, at that time a professor in the Ecclesiastical Academy of Moscow, published the first volume of his *History of the Russian Church* (1880-82). It embraced the so-called Kieff period—i.e., till the Tartar invasion at the beginning of the thirteenth century. The outspoken criticism of accepted views and presentation of events in a new light produced a sensation among ecclesiastical scholars. The work has been recognized as the standard book of reference upon the subject, but, "owing to circumstances not depending upon the author"—i.e., censorship—the present second volume, Part I., in 920 pages, dealing with the Moscow period, was delayed for nineteen years. N. F. Dubrovin has written a *History of the Crimean War and Defence of Sevastopol*, in three volumes, with maps and diagrams. It is a splendid work, setting forth with impartiality the unheard-of plundering of the treasury and the primitive armament. The only balm of consolation to the national pride he finds in the unexceptionable, almost heroic, endurance of the rank and file. Another work of great value is K. R. Kacharofski's *Russian Commune*, in five volumes, of which only the first volume has appeared. It contains a general introduction on the scope, method, materials, and history of classification; then follows a description and classification of the various forms of peasant communes in Russia, together with a survey of their consecutive transformations. The second volume will be devoted to the present state of the commune and its relation to agricultural progress; the third, to the conditions which decompose the commune; the fourth, to the chances of rise and growth of existing forms of communal and *artel* labor; the fifth will be a detailed study of the literature of the subject. The Russian reviews pronounced it one of the most remarkable books on economics that have appeared in late years. Other historical works deserving mention are *The Economic Development of Europe Till the Rise of Capitalism*, Vol. II., by Maxim M. Kovalefski, one of the few Russian writers with a European reputation. It is an important contribution to the history of the subject. First it deals with the history of land tenure in western Europe in the latter part of the Middle Ages; then the decay of this form of economy is shown to have necessitated the liberation of peasants and abolition of serfdom, and along with this the very traces of communal property disappeared before economic reforms and peasant legislature. The mass of material gathered is of inestimable value. Of considerable historic interest is N. Barsukoff's *Life and Labors of M. Pogodin*, the great advocate of Panslavism. The fourteenth volume forms an interesting record of the social and literary conditions in Russia at the close of the Crimean War. *Sources of the Dictionary of Russian Authors*, of which the first volume (Aaron-Gogol) appeared in 1900, will be a reprint of the private card-catalogue of over 400,000 entries, gathered by the indefatigable bibliographer, literary historian and critic, S. A. Vengeroff. It contains absolutely all the references to any given Russian author which are to be found in the whole of Russian printed literature, including daily papers. This card catalogue is the basis of Vengeroff's stupendous works now in course of publication: *Russian Books*, mentioned in the article for 1899; *Biographical Dictionary of Russian Authors*, *Russian Poetry* and several others.

Literary History and Criticism.—One of the most interesting volumes of criticism that have appeared in some time is *A Hundred Years of Literary Development* by a young and talented scholar, A. K. Borozdin, containing an admirable survey of Russian literature for the nineteenth century. Of especial interest are the author's opinions of Lermontoff and the reforms of Peter I., and the estimates of the great realists, Tolstoy, Dostoyefski, and Turgenyeff, and his firm opinion that it is only through a close adherence to the ideals of these masters that a healthy development of a national literature is possible. Still another young critic, Yuriy Veselofski (a nephew of the Russian Academician of the same name), has published an interesting volume of *Literary Essays*, the subjects of which range from Racine and Schiller to Leopardi and Alphonse Daudet. Of special importance is his series of studies upon the almost unknown literature of Armenia, also included in the volume. P. D. Boborykin's *European Novel in the Nineteenth Century* (the novel in the West during two-thirds of a century) is a brilliant study of most of the individual writers of the century, but as a philosophical exposition of the leading currents underlying the literary development during the century it is successful only as a pioneer in the field. Professor D. Ovsyaniko-Kulikofski's study, *L. N. Tolstoy as an Artist*, which appeared in the April, May, and September numbers of *Zhizn (Life)*, is a highly admirable research into the domain of the psychological workings of this writer. A. I. Vvedenski's book under the pretentious title *Social Self-Consciousness in Russian Literature* is a collection of indifferent critical sketches formerly published in the periodical *Niva*. Mention must also be made of the arrangements for a new *édition définitive* in twelve volumes of the complete works of V. G. Byelinski, a contemporary of Pushkin, and the greatest name in the annals of Russian criticism. The editor of the new edition is the famous bibliographer and critic Vengeroff, and two

volumes, containing in all nearly 1200 pages, appeared in 1900. Portions of a new study, *Life of Byron*, by Alexey Veselofski, appeared in the March, May, and November numbers of the *European Messenger*. The international reputation of its author warrants the presumption that the *Life* will be translated into English when the whole of it appears in book form. I. I. Ivanoff's book, *A. N. Ostrofski, His Life and Literary Activity*, is a highly valuable first attempt at a collection of all existing material relative to the great Russian dramatist's life and work.

Fiction.—One of the most promising figures among contemporary Russian novelists is Maksim Gorki, whose collected works are now being published in five volumes, of which three appeared in 1900. Gorki's special province is that of depicting the so-called *bosyaki*, or Russian tramps. The publication of his new novel, *The Muzhik* (after two instalments in the March and April issues of *Zhizn*), was interrupted owing to the author's illness—consumption, as the report has it. In the last two numbers of the same monthly for 1900 the first portions of another novel, *Thrice*, by the same author, appeared, and a revised and extensively rewritten version of the ill-starred *Muzhik* is promised for 1901. In the same journal (January, 1900) appeared *In the Ravine*, the latest story of Anton Chekhoff, another member of the younger group whose slightest sketches are redolent of the Russian soil. A new edition of his collected works in eleven volumes was undertaken in 1900. D. S. Mereshkovski, who has already one historical novel to his credit dealing with Julian the Apostate, reverts once more to fiction with the second part of the trilogy, *The Gods Resurrected*, the hero of which is the enigmatic Italian artist, Leonardo da Vinci. A part of it appeared in 1899 in the suppressed monthly *Nachalo*. Melshin, whose two volumes of graphic stories of prison life in Siberia, *From the World of Outcasts*, have been given a place of honor by the side of Dostoyevski's like stories, contributed a powerful sketch, *Life's Stepchildren*, as well as a masterly essay, *Russian Penal Servitude on Trial Before the Scientists of the Chair*. Other works of fiction of the year were: *The Dusk of the Spirit*, by Z. Hippus; *Diseased Blood*, by K. Barantsevich, and the annual novel by Boborykin, *Of the Same Kind*, published in the *European Messenger* for January and February, 1900.

Poetry.—The most widely discussed production in this line was *Alma*, a tragedy, by the gifted poet Minski, who some years back threw his reputation to the winds before the allurements of decadence. Though written long ago, the tragedy appeared only last year. The heroine, Alma, is an erotomaniac, whose *idée fixe* is absolute freedom, and who dies at last among lepers. All critics of note have pronounced it the acme of affectation and absurdity, and Mikhaylofski, the veteran critic, found it an event of great moment as conclusively proving the impotence of the decadent school. A volume of poems by Fofanoff, one by Ian, and many poems in periodicals by K. Balmont, the talented translator of Shelley, Byron, Schiller, and Goethe, are the other contributions by the Russian decadents. The third and last volume of verse by Lokhvitskaya, a poetess of marked individuality, whose poems are distinguished by their true lyric quality and the rich coloring of their imagery, contains the productions of the last three years, including "The Nereid," "The Humble Bee," and "The Salamander." Other noteworthy volumes of verse are *Songs of Old Age* by the veteran poet A. M. Zhemchuzhnikoff, whose fiftieth anniversary of literary activity was celebrated on February 23, and one by the deceased philosopher Vladimir Solovyoff.

Philosophy.—Professor Prince N. Trubetskoy published the first volume of his exhaustive work *The Doctrine of Logos in its Historical Development*. Its chief thesis, based on a historical investigation of the subject, is that the Christian idea of Logos is a product of two factors: the Hellenic philosophical speculation and that life event which terminated the religious development of Judaism, and began the history of Christianity.

Jubilees and Deaths.—The jubilees of the year were, in October, the fortieth anniversary of the literary activity of Boborykin (*q.v.*) and the fiftieth anniversary of Zhemchuzhnikoff, mentioned above. Death has removed the philosopher-poet Solovyoff (*q.v.*), the noted novelist Sheller-Mikhayloff, the exiled Nihilist philosopher Lavroff (*q.v.*), and the poet L. N. Maykoff, vice-president of the Imperial Academy of Sciences, who died April 20, 1900.

RUTGERS COLLEGE, at New Brunswick, N. J.; chartered in 1766 with the title Queen's College, adopted its present name in 1825. The college has an endowment of over \$100,000. In 1899-1900 it had a faculty of 28 and an attendance of 200. The library contains 41,381 volumes. A preparatory school in connection with the college since its foundation now has 170 pupils.

RYE. The following table, published by the Department of Agriculture, division of statistics, shows the acreage, production and value of rye in the United States in 1900:

STATES AND TERRITORIES.	Rye.				
	Acreage.	Yield per acre.	Production.	Value per bushel.	Total value.
		<i>Bushels.</i>	<i>Bushels.</i>	<i>Cents.</i>	<i>Dollars.</i>
Maine.....	993	17.2	17,090	82	14,006
New Hampshire.....	687	17.1	15,168	82	12,436
Vermont.....	2,867	16.6	47,924	61	29,294
Massachusetts.....	7,914	16.9	133,747	75	100,310
Rhode Island.....	.....	.....	.....	.....	.....
Connecticut.....	14,106	17.0	239,808	65	156,871
New York.....	211,203	15.1	3,189,165	56	1,786,969
New Jersey.....	64,717	15.9	1,029,000	55	565,650
Pennsylvania.....	288,647	15.3	4,416,299	53	2,340,636
Delaware.....	.....	.....	.....	.....	.....
Maryland.....	24,729	16.5	408,086	52	212,176
Virginia.....	26,250	10.5	370,125	58	214,672
North Carolina.....	46,212	8.9	411,287	76	312,372
South Carolina.....	3,902	7.5	29,285	106	30,736
Georgia.....	15,647	7.0	109,529	108	118,815
Alabama.....	1,804	7.8	14,071	106	14,493
Texas.....	3,917	16.5	64,630	67	43,302
Arkansas.....	1,715	11.5	19,722	72	14,200
Tennessee.....	11,297	11.0	124,267	68	84,502
West Virginia.....	12,171	10.5	127,796	64	81,769
Kentucky.....	22,488	13.1	294,598	63	186,594
Ohio.....	30,905	16.6	513,093	55	282,163
Michigan.....	71,306	14.6	1,041,068	48	499,713
Indiana.....	32,167	15.1	485,732	50	242,861
Illinois.....	73,577	17.2	1,270,684	47	597,221
Wisconsin.....	180,534	15.8	3,010,437	49	1,475,114
Minnesota.....	53,151	19.5	1,086,444	42	456,306
Iowa.....	100,365	18.0	1,806,570	41	740,684
Missouri.....	9,607	14.0	134,498	51	68,534
Kansas.....	126,479	15.2	1,922,461	46	884,667
Nebraska.....	61,073	14.2	867,287	40	346,995
South Dakota.....	3,623	10.6	27,804	39	10,844
North Dakota.....	16,152	5.2	83,980	41	34,426
Montana.....	.....	.....	.....	.....	.....
Colorado.....	2,350	16.8	39,489	54	21,319
New Mexico.....	.....	.....	.....	.....	.....
Utah.....	3,363	17.5	59,202	52	30,766
Idaho.....	.....	.....	.....	.....	.....
Washington.....	2,408	16.3	39,169	59	22,718
Oregon.....	5,841	16.1	94,010	61	57,364
California.....	38,660	13.0	502,540	59	299,496
United States.....	1,591,808	15.1	23,906,927	51.2	12,255,417

ST. ANDREW, BROTHERHOOD OF, an organization in the Protestant Episcopal Church, founded in 1883 for the spread of Christianity among men. It had in 1900 a membership in the United States of about 12,000, distributed among 1773 chapters, and in Canada 2000 in 180 chapters; there are chapters also in England, Scotland, and Australia. The society organ in the United States is *Saint Andrew's Cross*. President, H. D. W. English, Pittsburg, Penn.; secretary, Carleton Montgomery, 281 Fourth Avenue, New York.

ST. CHRISTOPHER, or ST. KITTS. See **LEeward ISLANDS**.

ST. LUCIA. See **WINDWARD ISLANDS**.

ST. VINCENT. See **WINDWARD ISLANDS**.

SALT. The amount of salt produced in the United States during the year 1899 is stated by the United States Geological Survey at 18,356,503 barrels of 280 pounds net weight, valued at \$7,509,184, as against 17,612,634 barrels in 1898 with a value of \$6,212,554. The imports of salt during the year 1900 amounted to 415,775,592 pounds, valued at \$633,192, an increase over the imports of 1899, which are stated at 386,378,938 pounds, with a value of \$587,103. The exports in 1900 were 15,021,861 pounds, valued at \$65,410, while in 1899 they amounted to 25,200,191 pounds, valued at \$86,465, and in 1898, 17,280,193 pounds valued at \$63,624.

SALVADOR, the smallest republic of Central America, lies to the south of Guatemala and Honduras and borders on the Pacific. The capital is San Salvador.

Area and Population.—The republic consists of 14 departments, of which the total area is estimated at 7225 square miles. According to the last official estimate, the population at the end of 1894 was 803,534. The inhabitants of Salvador are chiefly Indians and mestizos, those of pure European blood numbering only about 20,000. The population of San Salvador with its suburbs has been reported at 50,000. Other reported populations are: Santa Ana, 15,000; Sonsonate and San Miguel, each 10,000;

Ahuachapam and San Vicente, each 8000. Late in 1900 the president, in pursuance of an enactment of the congress, ordered a census of the republic to be taken on March 1, 1901.

Government and Education.—The constitution vests the executive authority in a president, elected for a term of four years and assisted by a cabinet of four members. The president in 1900 was General Tomás Regalado, who after a successful insurrection in November, 1898, assumed the executive. The legislative power devolves upon a congress of 70 representatives, elected annually. Besides local magistrates and inferior courts, there is the Supreme Court of Justice. The regular army is reported to number 4000 men and the militia 18,000. Roman Catholicism is the prevailing religion. Primary education is free and nominally compulsory. There is a small national university. In 1900 the reported number of periodicals and newspapers published was 17, of which San Salvador had 10.

Finance.—The chief sources of revenue are import and export duties and excise; the principal items of expenditure are for the departments of finance, war, the interior, and public works. The revenue and expenditure for 1898 were reported at 4,609,630 pesos and 5,266,638 pesos respectively. In 1899 an arrangement was made between the government and the Salvador Railway Company, whereby the latter, in consideration of the transference to it of the government railways and other concessions formerly held by the Central American Public Works Company, would take over the foreign debt of the republic, contracted in England in 1889 and 1892. Accordingly, on November 14, 1900, the English bonds, amounting to £716,860 (\$3,488,241), were incinerated at San Salvador. The internal debt in 1899 was about 8,650,000 pesos. The value of the peso on October 1, 1899, was 43.6 cents, and on October 1, 1900, 45.1 cents.

Industries and Commerce.—Agriculture and mining are the two most important industries. The leading products include coffee, tobacco, indigo, sugar, rubber, and balsam. In December, 1900, a decree was announced, providing for the establishment at San Salvador of a Central Board of Agriculture. The principal metals found are gold, silver, copper, mercury, and iron. Coffee is the leading export; rubber, indigo, and tobacco are also of some importance. The principal imports are cotton textiles, alcoholic liquors, iron and steel wares, flour, and silks. The foreign trade is carried on chiefly with the United States, Great Britain, Germany, and France. In 1896 the imports amounted to 3,347,718 pesos, and the exports, 7,485,384 pesos. The trade with the United States, expressed in American money for the calendar year 1900, was: Imports, \$756,586; exports, \$746,936. The railways after the completion of the line from Port Union to San Salvador will have an aggregate mileage of 217.

SALVATION ARMY, organized in London in 1865 by the Rev. William Booth for the purpose of spreading the Gospel among the masses. It has international headquarters in London and headquarters for the United States at 120 West Fourteenth Street, New York City. It has 15,300 officers, whose lives are entirely devoted to the work, and nearly 7300 corps or societies in 47 countries of the world. In the United States there were, in 1900, 2577 officers, 730 corps, 200 social relief institutions, with daily accommodation for about 7500 persons; 5 institutions for homeless women; 19 rescue homes, including a maternity hospital and an industrial home; 90 shelters for men, industrial homes and salvage brigade stations, accommodating 6000 of the homeless working classes, 24 slum settlements, and 2 farm colonies. The society received a gold medal at the Paris Exposition of 1900 for its exhibit of social relief operations among the poor in the United States. The United States branch expended nearly \$1,000,000 in pursuance of its work during the year. General and commander-in-chief, William Booth, London; United States commander, Commander and Consul Booth-Tucker. See VOLUNTEERS OF AMERICA.

SAMOAN ISLANDS are situated in the Pacific Ocean, about 2000 miles south and 3000 miles west of the Hawaiian Islands. The group consists of about a dozen islands, most of which are unimportant. The principal islands are Savaii and Upolu, belonging to Germany, in accordance with the Anglo-German agreement of November, 1899, and Tutuila, containing the important harbor of Pago-Pago and belonging to the United States. The total area of the group is estimated at 1700 square miles and the population at 36,000, of which about 30,000 inhabit the islands of Savaii and Upolu. The principal agricultural products are cocoa-nuts, copra, cotton, sugar, and coffee. According to reports from Germany, the Samoan Islands are especially adapted for the cultivation of tobacco, coffee, tea, and cotton. The commerce of the islands for 1899 is given as about \$966,000. The imports, which amounted to \$523,904, came mainly from the Australian colonies of New South Wales and New Zealand and from Germany and the United States. The exports amounted to \$442,276, and mainly went to the above-mentioned Australian colonies, Great Britain, and the Azores. The number of vessels entered and cleared at the port of Apia during 1899 was 81, with an aggregate tonnage of

94,022. In January, 1900, the United States Senate ratified the Anglo-German agreement concluded in November, 1899. A naval officer was appointed governor of Tutuila by the United States in February. The German president of Apia was appointed governor of Savaii and Upolu in March.

SANITATION. Milk Supply.—The Montreal Medico-Chirurgical Society has entered into a voluntary arrangement with certain milk dealers whereby the dealers will follow rules formulated by a board of control, and will submit to the testing of their herds and of the milk.

Cleansing Tenement Districts.—The Chinese district in Chicago was thoroughly disinfected in June, 1900, by Chief Sanitary Inspector Young, who also detailed inspectors to watch the Chinese quarter for the arrival of strangers, lest they should bring in cases of bubonic plague. In New York City, Dr. Blauvelt, chief contagious disease inspector, began the cleansing of the Italian quarter July 6, 1900. About fifteen thousand gallons of disinfecting fluid were used on that day. The Chinese district was next attacked and thoroughly cleansed.

School Sanitation.—The Department of Public Safety of Philadelphia ordered two hundred and thirty-seven small filters for drinking-water to be placed in as many public schools in the city during 1900. In the public schools of several cities individual drinking cups are supplied to the public-school children, each cup being numbered and hung, when not in use, on a similarly numbered peg. This sanitary measure followed the initial step of abolishing slates and sponges. The Medical Society of Nova Scotia offers a prize of \$10 to the pupil under 16 years in attendance upon a public school in the province for the best essay on "School Sanitation."

Dr. F. M. Burnett, in the *British Medical Journal*, reports a case showing that a diphtheria patient may transmit the disease to another long after he is supposed to be well. He suggests that no child who has recently suffered from diphtheria should return to school until at least six months after his apparent recovery, and then only when on each of two or three occasions a week apart no bacteria of diphtheria are found in throat or nose. See **HYGIENE IN PUBLIC SCHOOLS AND DIPHTHERIA**.

Car Sanitation.—At the annual meeting of the American Public Health Association, held in Indianapolis, Ind., in October, 1900, the recommendations of the committee on car sanitation were contained in a paper read by Professor S. H. Woodbridge, of Boston.

Several members urged that laws be enacted to compel Pullman and similar companies to ventilate bedding daily, to keep the cars and the linen clean, and to use white blankets, which should be cleansed when soiled. Attention was called to the risk resulting from the coughing of tuberculous patients upon the blankets in sleeping-cars. See **HYGIENE; PUBLIC HEALTH, and VITAL STATISTICS**.

SANTO DOMINGO, or the DOMINICAN REPUBLIC, comprises the eastern and larger, but less populous, portion of the island of Haiti, the western part being the republic of Haiti. The capital is the city of Santo Domingo, the first town built by Europeans in the New World.

Area, Population, and Education.—The republic consists of six provinces and five maritime districts, the total area of which is 18,045 square miles. The last official estimate (1888) placed the number of inhabitants at 610,000. These are chiefly mestizos and mulattoes, though negroes and whites (Spanish descent) are numerous. In 1892 the capital had 14,150 inhabitants; the population of the chief port, Puerto Plata, is about 4500. Spanish is the prevailing language, but French and English are also spoken. Roman Catholicism is the state religion. Besides a professional school and other institutions for higher education, there were in 1899 about 300 primary schools, with 10,000 pupils. Primary instruction is free and nominally compulsory.

Government.—The chief executive authority rests with a president, who, according to the constitution, is chosen for a term of four years through the medium of an electoral college, and is assisted by a ministry of five members. The president in 1900 was Señor Juan Isidro Jimenez, who after his revolution of 1899 was elected on October 20 of that year. The legislative power devolves upon a congress of twenty-two deputies, elected by popular vote for terms of two years. The provinces and districts are administered by governors appointed by the president. Besides local magistrates, there are eleven courts of first instance and a supreme court. There is a small regular army.

Finance.—The unit of value in Santo Domingo is the United States gold dollar, but the circulating media are chiefly debased silver and depreciated paper. The revenue, which accrues mainly from import and export customs, amounted in 1899 to about \$1,849,000.

Industries, Commerce, etc.—The principal products are tobacco, sugar, cacao, bananas, coffee, divi-divi, woods, beeswax, resin, and molasses. Little mining has been done, though various minerals occur, including coal, salt, iron, gold, and copper. The imports in 1899 amounted to \$1,857,702; the exports to \$4,539,185.

SAPPHIRES. See GEMS.

SAXE COBURG, H.R.H., THE DUKE OF. See ALFRED, PRINCE ERNEST ALBERT.

SCHOOLS. See HYGIENE IN PUBLIC SCHOOLS and SANITATION; EDUCATION IN THE UNITED STATES; UNIVERSITIES AND COLLEGES (paragraph Entrance Requirements).

SCIENCE, CHRISTIAN. See CHRISTIAN SCIENCE.

SCIENCES, NATIONAL ACADEMY OF, incorporated by act of Congress March 3, 1863. Section 3 of the act of incorporation provides: That the National Academy of Sciences shall hold an annual meeting, and that the academy shall, whenever called upon by any department of the government, investigate, examine, experiment, and report upon any subject of science or art, the actual expense of such investigations to be paid from congressional appropriations. The annual reports are published by Congress as House and Senate documents. President, —; vice-president, Asaph Hall; foreign secretary Alexander Agassiz Boston, Mass.; home secretary, Ira Remsen, Baltimore, Md.; treasurer, Charles D. Walcott, Washington, D. C.

SCIENTIFIC EXPEDITIONS. See ZOOLOGICAL STATIONS.

SCOTLAND. See GREAT BRITAIN.

SCOTLAND, CHURCH OF, a member of the Anglican Church, known as the Established Church of Scotland, the king being represented by an annually appointed lord high commissioner. It is, however, Presbyterian in constitution and is presided over by a moderator, who is chosen yearly by the General Assembly. The country is divided into 16 synods, and 84 presbyteries, and 1585 congregations, embracing 656,112 communicants, the church population being estimated at one-half the whole population of Scotland. It has, in service, 1700 ministers and 9400 elders, directed supremely by the General Assembly, which convenes annually at Edinburgh. Lord high commissioner for 1900, the Earl of Leven and Melville; moderator, Rt. Rev. Norman McLeod, D.D., Inverness.

SCOTLAND, UNITED FREE CHURCH OF, formed by the union of the Free Church of Scotland with the United Presbyterian Church on October 31, 1900, when the Rev. Principal Rainy, D.D., was elected moderator of the united assembly. In polity and doctrine the united church agrees substantially with the Established Church, but receives no state support, and admits no state control in its affairs. Accurate statistics for the new organization are not yet available, but the latest reports of the separate churches give a total of 104 presbyteries, 1706 congregations, and 495,178 communicants, with 1786 ministers and 15,606 elders. The individual churches have long carried on extensive and successful missionary work in Arabia, China, India, Syria, Africa, and West Indies.

Anti-Unionists, a dissentient minority of the Free Church of Scotland, small in numbers, but claiming to represent 16,000 church members, constituted themselves the Free General Assembly of the Free Church of Scotland, and announced their purpose of disputing at law the title of the entire church property, asserting their own rights as inheritors of Free Church traditions.

SCULPTURE. Among the notable sculpture of the year in America may be mentioned the following: By Daniel C. French, marble bust of the late Bishop Phillips Brooks, unveiled at Trinity Church, Boston, December 23, 1899; bronze statue of Governor John S. Pillsbury, presented to the State university at Minneapolis, by the alumni, unveiled September 12, and in connection with E. C. Potter, an equestrian statue of Washington, presented to France by the women's patriotic societies of the United States and unveiled in the Place D'Jena, Paris, July 3. Bronze group by Giuseppe Moretti, Stephen C. Foster memorial, unveiled in Pittsburg, Penn., in August. By Franklin Simmons, statue of General Grant, in the rotunda of the Capitol at Washington, presented by the Grand Army of the Republic, unveiled May 19. Same subject and General Sherman, bronze statues, by J. Massey Rhind, gifts of Mr. Hackley to the city of Muskegon, Mich., May 30, and a soldiers' monument, dedicated at Port Chester, N. Y., September 16. By Charles Niehaus, bronze statue in architectural setting, at Scott Circle, Washington, D. C., presented to government by American Institute of Homœopathy, June 21. By Professor Amateis, of Rome, an Independence Monument, presented by the late Henry Rosenberg, Galveston, May 21. By Moses Ezekiel, bronze statue of Thomas Jefferson, presented to Louisville, Ky., by Bernhard and I. W. Bernheim, July 4. By Paul Bartlett, equestrian statue of Lafayette, the gift of the school children of the United States to France, model unveiled in Paris, July 4. By George Julian Zolnay, bust of Edgar Allan Poe, unveiled at University of Virginia, Charlottesville, Va., in October. By Thomas Ball, large statue of

Washington, with group of allegorical figures, unveiled at Methuen, Mass., February 22. By Bartholdi, bronze group of Washington and Lafayette, presented to New York by Charles Broadway Rouss, April 19. By Trentanove, bronze statue of Daniel Webster, presented by Stilson Hutchins, unveiled at Scott Circle, Washington, January 18.

American contributors to the department of sculpture at the Paris Exposition were: George Grey Barnard, Clement J. Barnhorn, Paul W. Bartlett, Kuehne Beveridge, Ella von Wrede, Solon H. Borglum, Karl Bitter, Victor D. Brenner, Richard E. Brooks, Alexander S. Calder, Cyrus E. Dallin, John Flanagan, J. S. Gelert, Charles Grafly, Eli Harvey, Henry H. Kitson, Frederick Macmonnies, Carrol B. MacNeil, Samuel Murray, A. P. Proctor, J. H. Rondebust, Augustus Saint Gaudens, Janet Scudder, A. C. Simons, Douglas Tilden, Bessie Potter Vonnoh and Enid Yandell. Grand medals of honor went to Augustus Saint Gaudens, Daniel C. French and Frederick Macmonnies; gold medals to George Grey Barnard, Richard E. Brooks and Charles Grafly; silver medals to Karl Bitter, S. H. Borglum, Cyrus Dallin, John Flanagan and C. B. MacNeil.

Honors awarded to foreign sculptors at the Paris Exposition were given to the following, only those receiving the Grand Prix being mentioned. France: J. P. Aubé, E. Barrias, F. Bartholomé, Alfred Boucher, J. Chaplain, Antonin Carles, Alexandre Charpentier, Félix Charpentier, J. Coutant, E. Frémiet, Georges Gardet, G. Lemaire, L. H. Marqueste, Gustave Michel, Denys Puech, L. O. Roty and Raoul Charles Verlet. England: Thomas Brock, George Frampton and Hamo Thornycroft. Germany: Reinhold Begas, Peter Breuer, and Robert Diez. Austria: Vactave Mystberk and Anton Scharff. Belgium: J. Van Bieskraecke, Julian Dillens, J. Lambeaux, and Constantin Meunier. Spain: Benllinre y Gil and Blay y Fabrega. Hungary: Jean Faruz, Aloyse Strobl, and Georges Zola. Italy: Ernest Bazzaro, Ernest Biondi, and Vincent Gemito. Mexico: Jésus Coutreras. Holland: Mademoiselle W. M. Bosch-Reitz. Portugal: Antonio Teixeira Lopez. Russia: Mark Antokolsky and J. Troubetzkoi. Switzerland: Antonio Chiantone.

SCULPTURE SOCIETY, NATIONAL, founded 1893, has a membership of over 375, including sculptors, many lay members, and several honorary fellows. It aims to improve the popular taste, promote sculpture of a high class, and advance the interest of sculptors. Annual exhibitions are held at 215 West Fifty-seventh Street, New York City. President, J. Q. A. Ward; secretary, William Herbert, 436 West Twenty-second Street, New York.

SEALING. The year 1900 showed a continued decrease in the Alaskan rookeries, a condition attributed to the pelagic method employed by the Canadian sealers. In order to check the decrease, the plan of branding the females was followed, but with small success. During the year, 22,470 skins were taken in the Pribilof Islands, Bering Sea.

SENEGAL, or SENEGAMBIA, the oldest and one of the most valuable of the French possessions in Africa, is a colony on the Atlantic Coast, between the Sahara on the north and the British crown colony of Gambia on the south. The estimated area of the colony now is about 80,000 square miles, and the population, 1,180,000. In addition, under the general term Senegabia may be included various autonomous districts, under French protection, with an estimated population of 1,000,000, and about 120,000 square miles of the western Soudan, administratively connected with the colony and having some 2,000,000 inhabitants. The entire territory is under the direct or indirect administration of a governor-general, who is aided by a colonial council and stationed at St. Louis. This port, near the mouth of the Senegal, has about 20,000 inhabitants. The estimated populations of other important towns are: Dakar, 12,000; Rufisque, 8,000, and Gorée, 2,000. The colony is represented in the French chamber by one deputy. There is a military force of 2600 men, of whom in 1900 nearly 1200 were natives. For the year 1899 the local revenue and expenditure balanced at 4,378,865 francs (the franc being worth 19.3 cents), while, according to the French budget of 1900 the expenditure of the home government on Senegal was 5,686,205 francs. The reported public debt in 1898 was 517,657 francs.

A railway 163 miles in length connects the coast towns of Dakar and St. Louis; the latter, during the rainy season, has water communication with Kayes, distant, by the windings of the river, 570 miles. From Kayes a railway, begun in 1881, toward Bammuko on the upper Niger, had been constructed in 1899 for a distance of 110 miles. In 1898 the telegraph lines in the colony aggregated 574 miles.

SEPTIC TANK. See SEWAGE PURIFICATION.

SERUM THERAPY. Immunity to disease occurs as a racial or tribal characteristic or in certain families or individuals. Attention was called by M. Remlinger, at a recent meeting of the Société de Biologie in Paris, to the immunity of the Arab

to typhoid fever and other diseases of the digestive tract. This peculiarity was attributed to the alleged fact that Arabs are accustomed from infancy to drink contaminated water, whereby they have become immunized. Immunity may be acquired, as was experimentally proven long ago, by receiving inoculations of blood serum taken from individuals who have had the disease or by having the disease one's self. Certain diseases are caused by bacterial infection. During the course of these diseases toxins are developed by or exist in the bodies of the bacteria. In nature's combat with the disease certain principles are developed in the blood serum which tend to neutralize the toxins, and these are termed antitoxins. In making use of this fact, animals are inoculated with a certain disease, and after changes have taken place in their blood its serum is taken and used hypodermically in human beings to prevent or to antagonize that disease. The employment of blood serum in this way is termed serum therapy.

Antivenene.—A report published in 1900 states that during the past ten years the mortality from snake-bites in India has averaged 21,000. The British government offers rewards for the slaughter of all species of venomous reptiles, but without effecting a reduction of the loss of life. Dr. Albert Calmette, of the Pasteur Institute at Lille, France, devised a serum, obtained from animals inoculated with rattlesnake poison, which is termed antivenene. This serum, Calmette stated, is not a true antitoxin, but produced temporary cell stimulation, instead of immunity.

Anticholera Inoculation.—Notes were published in 1900 on a series of experiments in Calcutta, where cholera has been very prevalent and fatal for years among the coolies employed by tea planters. The figures given are these: 654 uninoculated, 71 deaths; 402 protected with anticholera inoculation, 12 deaths. Proportion, 3.63 to 1. Reduction of mortality shown, 72.47 per cent.

Antipneumococcus Serum.—The serum has still to be devised which will immunize human beings against lobar pneumonia. It is possible to immunize mice and horses with present serum. Fanoni reports on the efficiency of Pane's serum, which has been used with some success by De Renzi, Maragliano, Cantieri, and Massalongo. Of eighteen cases of pneumonia, four of which were in children under the age of 3 years, one died. All of the children recovered after a few days' treatment with Pane's serum. If not deteriorated by age, he believes the serum will always ameliorate.

McFarland, of Philadelphia, prepares antipneumococcic serum by administering live cultures of the pneumococcus to horses. The organism is difficult to cultivate, and the measure of the toxin is inaccurate; it is preserved in a virulent state by cultivating it alternately on artificial culture media and in the rabbit. The serum is probably antimicrobial, but not a true antitoxin. This serum was used in 18 cases of lobar pneumonia in the German Hospital in Philadelphia, in addition to other treatment. The individuals varied in age from 15 to 48 years, and were admitted to the wards between the first and the sixth day of the disease. Temperatures ranged between 101.2° and 105° ; pulse between 90 and 128. Albumin was found in the urine of 15 cases, casts in 9, and blood in 1 case. Leukocytosis existed in 13 cases, and the pneumococcus was found in 15 cases. The serum, which was aged from 7 to 53 days, was given hypodermically over periods varying from 6 hours to 8 days in total doses of from 22 cubic centimetres to 460 cubic centimetres. Four patients died. The rest recovered by crisis or rapid lysis. Duration of the attacks did not seem to be lessened. Of 20 other cases treated in the Pennsylvania Hospital at the same time without serum, 4 died.

Antitubercle Serum.—Stubbert, of the Loomis Sanitarium, Liberty, N. Y., reported two years ago on 34 cases of pulmonary tuberculosis treated with injections of antitubercle serum. In all cases there was marked improvement in the physical signs, expectoration, cough, appetite, and weight, while in more than one-half the cases the temperature improved, and the bacilli decreased or disappeared in many. These cases were kept under eye. In 1900 Dr. Stubbert reported that there had been no relapses, and there had been marked improvement in 78 per cent. of these cases.

Antityphoid Serum.—Professor Wright of Netley Hospital, England, publishes statistics showing that both attacks and deaths were 7 times less frequent in the inoculated than in the uninoculated. The *Indian Medical Gazette* publishes the following figures, summarizing the antityphoid inoculations of 1899: There were 1312 cases of typhoid fever among the British troops, with 348 deaths, or over 25 per cent. Of the 4502 inoculated men, 44 suffered with typhoid and 9 died. Among the 25,851 non-inoculated men in the same corps and at the same stations, there were 657 cases and 146 deaths, giving the relative percentages of admissions and deaths as 2.54 and 0.56.

Antiamaryllic Serum.—No conclusive reports have been received during 1900 regarding the efficacy of the serum devised by Professor J. Sanarelli, of Bologna and Montevideo, the discoverer of the *bacillus icteroides*. Dr. Bellinzaghi, of Naples, has been experimenting with an anti-yellow fever serum at Vera Cruz. He claims

that all patients treated with the serum showed improvement, and that the black vomit was stopped in their cases at the time of his report in midsummer.

Antipest Serum and Haffkine's Fluid.—Abundant test has been made during 1900 of both antipest serum, devised by Yersin, and the prophylactic fluid of Haffkine. The former is blood serum taken from horses that have been inoculated with the plague; the latter is a fluid in which the bacillus of plague has been cultivated and rendered virulent by special methods, the bacilli after abundant growth being killed by an exposure of the culture to a temperature of 70° Centigrade for several hours. Hypodermic injection of the serum causes immediate immunity, which, unfortunately, lasts only 12 to 14 days. A difficulty in securing acquiescence in repeated injections at once arises, and as a popular treatment it is under a disadvantage. But it is the only actual remedy for the plague after it has appeared, for if given early in the disease, it is curative. Haffkine's method of inoculation with cultures of the *bacillus pestis* has the advantage of conferring an immunity lasting from a few days to several months. Calmette's experiments with Haffkine's fluid led him to believe that a single inoculation of 3 cubic centimetres of a culture a month old established immunity only after the seventh day and for a variable period thereafter. A great disadvantage in the use of the prophylactic fluid lies in the facts that during immunization the person is more susceptible to plague; and if he had already contracted even a mild case, the inoculation might be fatal. Authorities recommend the provision of antipest serum for prompt use, in order to arrest an epidemic in the first cases, and the employment of Haffkine's fluid to inoculate the people dwelling in localities threatened with an invasion of the disease.

SERVIA, an independent kingdom in southern Europe, occupies an area of 19,050 square miles, and its population was estimated in 1899 at over 2,400,000. The capital, Belgrade, has a population of about 60,000. Servia is mainly an agricultural country, and official reports for 1899 show an increase of nearly 300,000 hectares in the area under cultivation, which amounted to over 1,200,000 hectares, or one-fourth of the entire area of the country. The principal crops for 1899, stated in metric quintals (220.46 pounds) were as follows: Wheat, 3,413,236; rye, 389,591; barley, 786,348; oats, 621,567; maize, 6,150,051; and spelt, 69,667. A considerable area of land is also devoted to the cultivation of grapes and prunes. The latter are exported in large quantities to Austria-Hungary, Germany, and the United States. Servia is also very rich in minerals, the most important of which are iron, coal, lead, copper, zinc, gold, and oil. The mineral industry, however, is still in a state of infancy. Of other industries the most important are linen weaving and sugar refining. The commerce of Servia for 1899 shows a remarkable increase, a fact which is due mainly to the abundance of the crop, as the principal articles of the export trade of Servia are agricultural and farm products. The aggregate commerce of the kingdom for 1899 amounted to 110,800,000 kronen against 97,000,000 kronen in 1898. The krone is equal to 20.3 cents in United States currency. The exports for 1899 amounted to 56,500,000 kronen against 49,000,000 kronen in 1898. The value of the imports also increased from 35,200,000 kronen to 39,800,000, while the transit trade amounted to 14,500,000 kronen against 12,700,000 kronen in the preceding year. Nearly 60 per cent. of the trade of Servia is with Austria-Hungary. The principal articles of export during 1899 were agricultural and farm products, 25,302,000 kronen, and animals and animal produce, 23,575,000 kronen. The chief imports were wool and woolen products, 3,894,000 kronen; metals, 4,323,000 kronen; and cotton, 8,836,000 kronen. The budget for 1900 gives the revenue and expenditures for that year as 73,759,648 kronen each. The principal sources of revenue are direct taxes, 30,182,000 kronen; monopolies, 18,800,000, and customs, 6,354,000 kronen. The principal items of expenditure are interest on and payment of public debt, about 19,000,000 kronen; ministry of war, about the same; pensions, 2,500,000 kronen and public works, 6,861,694 kronen. The king's Civil List amounts to 1,138,000 kronen, and an annual allowance of 342,000 kronen has been granted to ex-King Milan. The debt of the kingdom at the beginning of 1899 amounted to 395,312,000 kronen, the greater part consisting of the converted loan of 1895. The railway lines of Servia had a total length of 354 miles.

The telegraph lines of the kingdom at the end of 1898 had a total length of 2526 miles, with 140 stations. The receipts from the posts and telegraphs for the same year amounted to 1,924,753 and 1,360,665 francs respectively. The educational system of Servia comprises one university, 31 middle schools, and 914 primary schools, with a total of over 80,000 pupils. The schools are mostly supported by the State. According to the census of 1895, 14 per cent. of the total population could read and write. The strength of the active army of Servia in 1899 was 128,000 men. The effective army upon mobilization has been reduced from 323,000 to 268,000 men. The government of the kingdom is vested in the king, who is assisted by a responsible ministry of eight members. The legislative power of the king is shared by the *Narodna-Skupština*, or National Assembly, in which each

county is represented by one deputy to every 4500 tax-paying males. The deputies are elected indirectly on a property qualification. The Senate consists of 16 members, 8 nominated by the king and 8 chosen by the assembly. Besides the ordinary assembly there is a Great National Assembly, consisting of twice as many members as there are in the *Skupshтина*. The Great National Assembly is convened only on very important occasions. For administrative purposes Serbia is divided into 15 provinces and 1290 communities, which are administered by their own assemblies.

History.—The beginning of the year witnessed a break in the relations between Serbia and Montenegro, which culminated in the recalling by the Serbian government of its representative at Cetinje. The most important event of the year was undoubtedly the marriage of King Alexander to Madame Draga Maschin, a former lady-in-waiting to Queen Natalie. The opposition to the match was so strong that the announcement made by the king of his betrothal to Madame Maschin, on July 22, was soon followed by the resignation of the prime minister and ex-King Milan, who had been commander-in-chief of the Serbian army. The king accepted both resignations and entrusted the formation of a new cabinet to M. Jovanvitch, a former judge of the Court of Appeals and a Progressive in politics. The majority of the members of the new cabinet are Moderate Liberals. The marriage of the king was celebrated on August 5. Russia, who favored the match, since it was instrumental in bringing about the resignation of ex-King Milan, deputed its ambassador at Vienna, Count Kapaist, to be its representative at the ceremony. Arrangements for a new loan of 2,000,000 francs were completed between the Serbian government and the National Bank of Serbia. The time-honored custom of sending ex-ministers to jail seems to have found a new adherent in the young king, judging from the recent arrest of the ex-Minister of Police Genshilch. See BULGARIA (paragraph Relations with Russia and Serbia).

SEWAGE PURIFICATION. The year 1900 is notable for the large number of studies in progress connected either with municipal plants in regular service, or with experimental installations for sewage purification. Chief among these may be mentioned the work at London, Manchester, and Leeds, England, and at the Lawrence Experiment Station of the Massachusetts State Board of Health. The third report on the London experiments brings some of the studies down to July, 1900. These studies are designed to ascertain whether some cheaper and more efficient plan may be substituted for the chemical treatment of the huge volumes of London sewage at the Barking and Crossness outfalls on the Thames, below London. The purification now effected is only partial, and the barging out to sea of the large quantities of sludge which result from the process entails a heavy expenditure. The plan recommended for trial on a larger experimental scale than has yet been attempted is: (1) Rough screening of the sewage; (2) rapid sedimentation; (3) rapid filtration through beds of coarse-grained coke. The beds, which in some cases are as deep as 13 feet, are filled, held full for two hours, emptied as rapidly as possible, and then allowed to rest, the fillings ranging in the different experiments from one to four times a day. The amount of dissolved oxidisable organic and putrescible matter reduced by the coke beds is placed at from 50 to a possible 80 per cent. of that contained in the crude sewage, as compared with 17 per cent. by chemical precipitation, while the suspended matter is practically all removed by the coke filtration as against about 80 per cent. in the case of chemical treatment. The coke beds have the further advantage of requiring no chemicals and of producing no sludge, but there would be some sludge to be removed if filtration was preceded by sedimentation. The experiments at Manchester, and to some extent elsewhere in England, were described by Gilbert J. Fowler, chemist of the Manchester disposal works, in a paper sent by him to be read before the American Society of Municipal Improvements, in September, 1900. Mr. Fowler said that the Manchester experiments showed that for the sewage of that city preliminary settlement is advisable before filtration, and that this, together with other valuable results, could be secured by using septic tanks. These tanks, as was demonstrated by both the Manchester and Leeds experiments, may be closed or open, but roofs keep the scum from being blown away and confine the odors, should any arise. Beds 3 feet deep, he thought, would purify Manchester sewage, after treatment in the septic tanks, at the rate of 600,000 gallons an acre. During the latter part of 1900, the city of Manchester adopted a scheme of sewage purification, including septic tanks and filter beds, estimated to cost \$2,371,000. The sewage will be filtered twice, first through coarse and then through finer beds. The changes involve an increase of 50 per cent. in the filtration area, and the treatment of the sewage by broad irrigation, after it has passed through the septic tanks and had been filtered twice.

Septic Tanks.—The septic tank, it may be explained, is simply a long narrow reservoir, through which the sewage flows slowly, depositing most of the suspended

matter on the way. The organic part of the deposit is largely reduced, or dissolved, by the action of a class of bacteria that live and work without air. The dissolved matter, and some of that held in suspension in a finely divided form, passes out of the tank as a part of the effluent, after which it is generally filtered before being discharged into a stream. The process is one of partial purification only, and is much the same as the action in the old-fashioned and much-maligned leaching cesspool. But the bacterial principles involved have been known for only a few years. The first septic tank, as such, was built by Donald Cameron, at Exeter, England, in 1860, but tanks effecting the same general results had been erected elsewhere years before.

Among the septic tanks now in use in the United States are those treating the sewage of Champaign, Ill., Marion, Ia., Independence, Mo., and Liberty, N. Y. while the sewage of many private institutions is also being treated in the same way. Particulars relating to 17 septic-tank installations in England, Ireland, Scotland, and the United States, some of which are only experimental, were given in a recent report to the trustees of Washington University, St. Louis, Mo., by Professor J. L. Van Ornum. (See *Engineering News*, November 15, 1900.)

The majority of the city sewage purification plants in the United States and Canada, like those in Massachusetts, employ intermittent filtration, or else broad irrigation, but chemical precipitation has been used to some extent. The tendency now is to discard chemical treatment for some one of the rapid bacterial processes, which are said to produce better results without expense for chemicals and the troublesome problems incidental to the disposal of the sludge. The city of Providence, R. I., however, is just completing chemical precipitation works in accordance with plans adopted before the septic tanks or bacterial contact beds were known. Worcester, Mass., has supplemented chemical precipitation with intermittent filtration. Pawtucket, R. I., is experimenting with the septic tank as a preliminary to its intermittent filtration treatment. Plainfield, N. J., proposes to change from intermittent filtration to the septic tank and double-contact filter-beds. The last-named plan has been recommended for Columbus, O., and for Birmingham, Ala., and a number of towns in the vicinity, which propose to co-operate in the establishment of joint disposal works. The cities and towns in the Passaic River valley, including Newark, Passaic, Paterson, Montclair, Orange, and other places, have been ordered to cease polluting the river with sewage by July 1, 1903, but as yet have not adopted plans looking toward that end. All sewage disposal in New Jersey is now under the supervision of the State Sewage Commission.

In conclusion, some of the most recent figures available may be given for the sewage farms of Berlin, Germany, the most extensive of the sort in the world. At the close of the fiscal year 1898-99, the city had acquired 28,400 acres for sewage farms, and had prepared 15,200 acres for irrigation. During the year 14,500 acres had been irrigated, the average quantity of sewage applied being 3800 gallons an acre. The most important crops raised, with their acreages, were as follows: Rye, 2609; hay and grass (irrigated meadows), 2550; oats, 1790; red beets, 1050; wheat, 1020; turnips, 641; potatoes, 380; barley, 353; beans, 156; carrots, 126; peas, 123; mustard, 108. Of the irrigated land 2660 acres were leased at an average of \$21.60 an acre, and the balance was cultivated by the city. There were maintained on the farm 801 oxen, 344 horses, and 159 cows. The total operating expenses of the farms for the year, including \$25,000 for taxes, but excluding general superintendence, were \$548,000. The gross income was \$601,000, leaving an apparent net profit of \$53,000, against which must be charged general superintendence, interest, and depreciation on the investment, to say nothing of the cost of pumping the sewage to the farms, which amounted to \$182,000 for the year. The disposal areas had cost \$9,800,000 up to the close of the fiscal year, of which \$5,700,000 was for land, but part of which is now used. It will be seen, therefore, that the extremely favorable reports about the profit from the Berlin sewage farms have no foundation in fact, but the city is to be congratulated in getting back so large a proportion of the cost of sewage disposal as it does.

SEWALL, ARTHUR, ship-builder and ship-owner, died at Small Point, near Bath, Me., September 5, 1900. He was born November 8, 1835, at Bath, where he was educated, and with an elder brother established in 1854 the firm of E. & A. Sewall, ship-builders and commission agents. In 1879, upon the brother's death, the firm assumed the style of Arthur Sewall & Co. During periods of depression in shipping the Sewall house was able to increase the carrying capacity of its fleet, and in 1894 built the first steel sailing vessel ever constructed in the United States. Mr. Sewall also sustained large railroad interests, being for some years president of the Maine Central, and director of the Boston & Maine, Mexican Central, and Atchison, Topeka & Santa Fé. He was long president of the Bath National Bank, and a prominent stockholder in many large corporations. In 1888-96 he was a member of the Democratic National Committee, and in the latter year, having declared in favor of the free coinage of silver, accepted the nomination of his party for vice-president

of the United States. After his defeat in the election of that year he ceased to be prominent in politics. It was, however, suggested that, in the event of Mr. Bryan's election in November, 1900, Mr. Sewall might be persuaded to accept the post of secretary of the navy.

SEWERAGE. No complete statistics are available to show the extent to which the cities and towns of the United States are provided with sewerage systems for the removal of household waste. It is known that all the principal cities of the country, excepting Baltimore and New Orleans, which are considering the matter, have such systems, and in general that most cities of 20,000 population and upward, as well as many even smaller, are so provided. The nearest approach to what may be termed a census of sewerage systems for the whole country is made in *The Manual of American Water-Works* for 1897, where there is a mere statement, under each city, whether or not it has sewers, without attempting to give information as to their nature and extent. Many places failed to reply to the question, but a summary of such information as was obtained shows that about 800 municipalities reported sewers in use for the removal of household wastes. Of these, 500 were on the combined plan, receiving both household wastes and surface water from the streets, and 300 received household wastes alone. At the same time about 3800 cities, towns, and villages possessed a public water supply. For the disposal of the sewage after its collection, see SEWAGE PURIFICATION.

SEYMOUR, Vice-Admiral Sir EDWARD HOBART, who has been commander-in-chief of the British fleet on the China station since 1898, commanded the naval brigade of the allied forces which attempted to reach Peking in June, 1900. (See CHINESE EMPIRE, paragraph Action of the Powers.) For his conduct of this relief expedition, which was unsuccessful because of the overwhelming numbers of the Boxers and the difficulties of transportation, Admiral Seymour was promoted to the rank of G.C.B.

SHAKERS, the oldest existing communistic society in the United States, known also as the Millennial Church, or United Society of Believers. The sect, which is now decreasing, originated in the eighteenth century as the followers of Ann Lee, an English Quakeress, and soon received the appellation of Shaking Quakers, because of their "unusual and violent manifestations of religious fervor." The first community in the United States, organized 1792 at Mt. Lebanon, N. Y., continues to be one of their largest settlements. The Shakers affect a uniformity of dress; observe a celibate life; are strict spiritualists; and worship God only in a duality of sex, which distinction, they hold, is eternal in the soul. Though opposed to war, they obey all peaceful demands of government, but participate little in politics. The latest figures, which, however, are estimates, assign the society 15 churches and 1000 members. The Shakers have published a limited sectarian literature.

SHANGHAI. See CHINESE EMPIRE (paragraph Cities of China).

SHEARMAN, THOMAS GASKELL, a well-known lawyer and advocate of the single-tax theory, died September 29, 1900. Born in England in 1834. In partnership with John W. Sterling, he met with great success as counsel for Jay Gould in damage suits arising from the gold panic of 1869, but it was in the defence of his friend Henry Ward Beecher in the suit brought by Theodore Tilton that Mr. Shearman came into public prominence. On the nomination of Blaine he stood for Cleveland and free trade, though he had been a staunch Republican from the formation of the party. In 1896 he supported McKinley on the sound-money issue, but in 1900, not being able to advocate the principles of either platform, he refrained from taking an active part in politics. His independence extended to economics, and believing in the injustice of protective tariff, he became identified with a number of revenue reform movements. Mr. Shearman wrote upon legal and economic subjects. Besides being joint author of *Law of Practice and Pleadings* (1861-65), and of an excellent treatise on the *Law of Negligence* (1870), he wrote *Talk on Free Trade* (1881); *Pauper Labor of Europe* (1885); *The Single Tax* (1887); *Crooked Taxation* (1890), and *Natural Taxation* (1891).

SHERMAN, JOHN, financier and statesman, who served the Republican party as United States senator, secretary of the treasury, and secretary of state, died October 22, 1900. He was born in Lancaster, O., in 1823, and after an academic education was engaged as an engineer on some public works in his native State for two years. He then studied law, and was gaining prominence in his legal practice at Mansfield, O., when he became actively interested in politics. In 1848 he was secretary of the Whig National Convention which nominated Zachary Taylor for the presidency, and in 1852 he was in the Baltimore Whig Convention which nominated General Winfield Scott. When member of Congress in 1855-61, the part which he played in regard to the great questions of the period on slavery and national finance made for him a reputation as an able and effective debater who aimed at accuracy rather

than oratory. Having been one of the founders of the Republican party in his State and president of the first Ohio Republican Convention, he advanced in Congress the doctrine upon which the Republican party was founded, that slavery should not be disturbed where it existed, but that it could and must be restricted to existing limits. During all that period of political strife and civil commotion in the years just before the war, when the Missouri Compromise, the Dred Scott decision, the introduction of slavery into Kansas and the Fugitive Slave law were the great questions, Mr. Sherman often participated in the debates and rose rapidly in reputation. His appointment as a member of a committee of three to investigate the troubles in Kansas was a turning point in his career. The final testimony was collated by Mr. Sherman, who prepared the report of the committee. When presented to Congress it caused deep feeling, and formed the basis of the national campaign of 1856. That year he canvassed the State for the Republican candidate, John C. Fremont. Three years later he lacked but three votes of election as speaker of the House, and was at once appointed chairman of the Ways and Means Committee, at the time in charge of both appropriation and revenue bills. Sherman immediately took a stand against the prevailing system of engrafting new legislation upon appropriation bills; he introduced the resolution for the appointment of a committee on the subject of a railway to the Pacific coast, which was the first move toward the construction of the Pacific Railroad; above all, he was largely responsible for that most important financial measure, the issue of the United States treasury notes of 1860.

When Salmon P. Chase resigned from the Senate in order to become secretary of the treasury, Sherman was elected in his stead, and took his place on the Finance Committee. He was re-elected to the Senate in 1866 and again in 1872. At the beginning of the war, during the intervals between the sessions, Sherman gave his services as a soldier, and largely at his own expense recruited the force known as the "Sherman Brigade." At the earnest request of both Lincoln and Chase, he abandoned his purpose to become a soldier, and retained his seat in the Senate, where he labored to strengthen the public credit and to provide for the support of the armies. When the specie payments were suspended in 1862 Sherman, in spite of great opposition, took a leading part in pressing that clause of the revenue bill which provided for the issuing of United States treasury notes as legal tender on the ground that this was the only measure which could enable the government successfully to carry on the war. At the request of Secretary Chase he carried through Congress, against great opposition, the National Banking bill. State banks were then issuing paper money in large quantities, and this "cheap money" in large part drove out of circulation the United States notes. Sherman favored taxing State banks out of existence. The financial system secured by this change marked a turning point in the preservation of the national credit and therefore of the national existence. In 1867 Sherman succeeded Mr. Fessenden as chairman of the Finance Committee, and held the place for ten successive years. He soon introduced the Refunding bill, but it did not become a law until 1870, and even then it lacked the provision for the resumption of specie payment which he had proposed. Several times prior to the panic of 1873 he had introduced measures looking toward the adoption of a coin standard, and once carried through the Senate a bill for the conversion of United States notes into bonds, but it was defeated in the House. He then favored a protective tariff and the reduction of internal revenue on whiskey, tobacco, etc., and a repeal of all taxes on other articles.

In December, 1872, Sherman was elected to the Senate for a third time, and began the battle which after several months resulted in the adoption of the act for the resumption of specie payments. After the election of 1876 he was a member of the famous visiting committee sent to Louisiana to count the votes. President Hayes, on his inauguration, March 4, 1877, appointed Sherman secretary of the treasury. In that office he had an opportunity to put the Resumption act into effect. The act promised that on or after January 18, 1879, the legal tender notes should be payable in coin. When he took office \$90,000,000 of the 4½ per cent. refunding bonds had been sold; by July 1, 1877, \$200,000,000 had been taken, of which \$15,000,000 was to be applied to resumption payments. Soon he had so raised the credit of the country that the rest of the bonds were withdrawn from the bankers and opened to public sale, with a result that 4 per cent. bonds sold at par. About this time no less than thirteen bills were introduced in Congress to repeal the Resumption act and one passed the House. Bills for the free coinage of silver (then worth 85 cents) were also introduced, and he was subjected to bitter personal attacks. On January 18, 1879—the day fixed for resumption—he had accumulated \$140,000,000 in the treasury. Of course the legal tender notes were at once received at par value, as he had predicted. Following up the advantages which he had gained, Secretary Sherman put into execution fresh measures for refunding the government indebtedness. So suc-



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cessful was he that within two years he had refunded nearly \$850,000,000 at less than 4 per cent., with an annual saving in interest charges of \$15,000,000. Great as were Sherman's services as a minister of finance, yet it must not be overlooked that it was he who secured the passage of the act providing that greenbacks should be reissued as they were redeemed. Thus they were fastened on the financial system of the country and the raids on the gold reserve in 1893 were made possible.

Sherman was ambitious to be President. His character and ability were strongly in his favor, but his rather hard personality, which lacked mobility and mellowness, was against him. In 1880 his name was presented to the Republican National Convention by James A. Garfield, who finally received the nomination. In 1881 he returned to the Senate, and was twice re-elected. Most of the time he was chairman of the committee on foreign relations. In 1884 Senator Sherman was again a candidate for nomination as President; four years later the movement in support of his nomination had gained greatly in strength, and by 1896 he had so much support that his withdrawal in favor of Mr. McKinley is said to have been secured by the promise of his appointment as secretary of state in the event of the election of Mr. McKinley. His advance from the chairmanship of the committee on foreign relations to the secretaryship of state seemed natural, and his promotion opened a place in the Senate for Marcus A. Hanna. Senator Sherman, however, had reached a time of life when he was unfitted for the delicate business of diplomacy, and he resigned, April 25, 1898, after little over a year in the office.

John Sherman's life was intimately connected with the political life of this country for more than half a century. Of great interest are his *Recollections of Forty Years in the House, Senate, and Cabinet* (1895) and the *Letters of Two Brothers* (1894)—namely, John Sherman and General William Tecumseh Sherman. In 1879 his *Selected Speeches and Reports on Finance and Taxation* were published.

SHIP-BUILDING. In Great Britain the tonnage of merchant ships added to the world's fleet in 1900 was greater than during any preceding twelve months in the history of the industry, it being 1,600,421 tons. In respect to size, the year saw a liner built at Belfast which measures 16,029 tons, while one of 19,000 tons was laid down in the same yards. As regards speed there have been two records established; one for small craft, made by the Parsons steam turbine-driven torpedo boat *Viper*, which on a three hours' official trial exceeded a speed of 33¾ knots, equal to 39 land miles, per hour; while the large passenger steamer *Deutschland* has maintained on an Atlantic voyage a mean speed of 23.36 knots, or nearly 27 land miles, per hour.

The world's ship-building during 1900, according to the most accurate figures which were available at the close of the year, was as follows: United Kingdom, 1237 vessels, 1,639,950 tons; Germany, 247 vessels, 252,533 tons; United States, 87 vessels, 179,138 tons; France, 40 vessels, 73,310 tons; Russia, 11 vessels, 47,123 tons; Holland, 101 vessels, 35,637 tons; Italy, 10 vessels, 34,834 tons; Norway, 38 vessels, 27,166 tons; Japan, 41 vessels, 23,784 tons; Austria, 8 vessels, 21,776 tons.

The grand total for all nations is 1925 vessels, aggregating 2,369,861 tons. In 1899 the aggregate tonnage of ships built was 2,445,232 tons. The decrease shown in 1900 was due to the large falling off in the tonnage of naval vessels constructed in the United Kingdom and to the slight decrease in all classes of vessels built in Germany and the United States.

In the United States the most recent official figures of shipbuilding are those issued by the Treasury Bureau of Statistics and covering the fiscal year ending June 30, 1900. They are as follows: 499 schooners, schooner barges and sloops, 109,605 gross tons; 25 Great Lake steam vessels, 97,847 gross tons; 523 canal boats and barges, 74,860 gross tons; 20 ocean screw steamships, 60,369 gross tons; 375 river steamers, 44,282 gross tons; 4 square rigged vessels, 6205 gross tons.

The steam vessels built—420, of 202,498 gross tons—surpass the record, the nearest approach being 1891, when 488 steam vessels, of 185,037 gross tons, were built. The steel vessels built—90, of 196,851 gross tons—exceed the previous record year, 1899, when 91 such vessels, of 131,379 gross tons, were built. Cleveland, O., ranks first as builder of steel vessels, with 9 steamships, of 42,119 gross tons, followed by Newport News, 7 steamships, of 28,202 gross tons; Chicago, 5 vessels, 24,504 tons; Detroit, 4 steamships, 15,693 tons. The total tonnage built and documented on the Great Lakes during the year—125 vessels, of 130,611 gross tons—is the largest in the history of that region. The total for the Middle Atlantic and Gulf coasts—605 vessels, of 135,473 tons—exceeds any record since 1872. The total for the New England coast—199 vessels, of 72,179 gross tons—has not been equalled since 1891, while the product of the Pacific coast—300 vessels, of 40,396 tons—is surpassed only by the returns of 1898 and 1899. Construction on the Mississippi River and tributaries—217 vessels, 14,509 tons—is 9000 less than 1899. The foregoing figures do not cover yachts or government vessels.

The material growth in ship-building in the United States, indicated by these figures, has given much encouragement to the hope that a ship-building industry commensurate with the country's rapid commercial and industrial growth may be developed.

SHOOTING. The United States Revolver Association was organized at New York on March 5, with Dr. Reginald H. Sayre as president, and B. F. Wilder, New York, secretary. On June 16 an international cable match was held between French and American experts, 10 on a side. The results were: American target—United States, 2479 out of possible 3000 for the team; France, 2441; French target—United States, 2410; France, 2387. The United States Revolver Association held national revolver and pistol championships at the military target shooting tournament at Sea Girt, N. J., August 31 to September 8. The revolver championship, 50 shots at standard American target, distance 50 yards, was won by A. L. A. Himmelwright, 442 out of possible 500; national pistol championship, under the same conditions, J. B. Crabtree, 427. An international match was held at Paris, July 19, teams of 5, 50 shots a man at 55 yards. Switzerland won, 2271 out of possible 3000; France, 2204; Holland, 1876; Belgium, 1825.

The National Rifle Association of America was formed at Sea Girt, N. J., on September 5, General B. W. Spencer being elected president and Lieutenant Albert S. Jones, secretary. During the course of the military tournament at Sea Girt the President's match for the United States military championship was won by Captain W. F. Whittemore, Fourth Regiment, N. J., 262 out of possible 300. The Centennial Trophy Match for the championship of the world was revived, and the American team won easily with an aggregate score of 2755 out of a possible 3600.

An event of the season was the international team match at Paris, in July. Teams of 5 men each competed, representing Belgium, Denmark, France, Holland, Norway, and Switzerland. The conditions were 40 shots each man, standing, kneeling and lying down. The Swiss team won, with 4399 out of a possible 6000; Norway, 4293; France, 4278.

The Grand Prix du Monaco, the most valuable prize known to wing shots, was won at Monte Carlo by Count O'Brien, of Spain 18 out of 20; there were nearly 100 entries. The eighth annual Grand American Handicap at live birds was held at Interstate Park, Long Island, N. Y., April 5-6, with 224 entries. Howard D. Bates, of Ontario, Canada, tied with seven others on 25 out of 25, and won on the shoot off with 59 straight. A Grand American Handicap at targets was instituted during the year at Interstate Park, June 14, 74 entries. R. O. Heikes, Dayton, O., broke 91 out of 100, distance 21 yards.

SIAM, an independent kingdom situated at the southeastern end of Asia, between French Indo-China and Burma. The boundaries, and consequently the area of Siam cannot be given with precision, as they are constantly undergoing changes. According to the agreement of 1896 between the British and French governments, all the territory, bounded by the rivers Menam, Mekong, Pechaburi and Bangpakong, together with the territory lying to the north of the Menam basin, making a total of about 200,000 square miles, is recognized as under the complete jurisdiction of Siam. The population of Siam is known with even less certainty than its area, and is variously estimated from 5,000,000 to 12,000,000. The Chinese element is supposed to be the most numerous, being estimated at from 3,000,000 to 4,000,000, while the number of Siamese is given as 2,500,000. The capital of Siam, Bangkok, has an estimated population of 250,000 and is the chief commercial centre of the kingdom. The principal occupation of the people is agriculture, which is mostly carried on by forced labor. The chief agricultural product is rice, which constitutes the main article of export. The crop of rice in 1899 was below that of 1898, and the exports of that product fell off from 519,360 to 455,306 tons. Another important article of export is teak wood, which was exported in 1899 to the amount of 36,616 tons against 22,692 tons in the preceding year. The total exports and imports of merchandise for 1899 amounted to 33,054,980 and 24,145,666 Mexican dollars respectively. The Mexican dollar amounted to 50.9 cents in United States currency. The trade of Siam is mostly with Singapore and Hong Kong. The principal articles of import are cotton goods, steel, iron and machinery, opium and sugar. The recent concessions for the construction of electric railways have created a large demand for railway supplies, which are mostly imported from Great Britain, Germany and Belgium. The trade with Japan up to the beginning of 1900 was insignificant, but it has considerably increased during the last year, which is undoubtedly due to the progressive and energetic measures adopted by the Japanese government to attract the trade of Siam. The mineral deposits of Siam are very rich and include gold, copper, tin, coal, iron and zinc. The revenue is derived mainly from taxes on gambling.

spirits and land. The budget for 1900 balanced at a little over \$10,000,000. There is no public debt, and there was a considerable cash balance in the treasury at the beginning of 1899. The railway lines of Siam are entirely under the control of the State, and have at present a total length of 180 miles. There are also about 500 miles of railways in the process of construction. Considering the fact that the first railway line in Siam was opened in 1893, it must be admitted that the railway policy of the Siamese government has been very progressive. Education is also making considerable progress and is subsidized by the government to a considerable extent. Siam has a monarchical government with the executive power vested in the king, who is assisted by a cabinet consisting of the heads of various government departments. The royal dignity is nominally hereditary, but the king has the privilege to choose his successor. The legislative council consists of 51 members, 12 of whom are appointed by the king. All the laws must be signed by the king in order to become valid, but the council is empowered to promulgate laws without the approval of the king in case of any temporary disability of the crown. For administrative purposes Siam is divided into 41 districts, each administered by a commissioner appointed by the king. A considerable number of important posts in the kingdom are occupied by Europeans, and the Siamese government manifests its willingness to adopt European ideas by sending every year a number of young men to be educated in Europe. The standing army of Siam is estimated at 5000, and can be increased at a short notice to double that number. Military service is compulsory between the ages of 18 and 21. The Siamese navy consists of 22 vessels, including 2 cruisers.

SIBERIA, a part of Asiatic Russia, has an area estimated at nearly 5,000,000 square miles, and its population, which in 1897 amounted to 5,698,924, is now probably about 7,000,000, as there has been considerable immigration from Russia for the last 3 years. Of the total population in 1897, 4,950,000 were Russians and the rest Asiatics. The largest cities are Tomsk, 52,000; Irkutsk, 51,000, and Blagovestchensk, 32,000. The town of Vladivostok, which has at present a population of about 30,000 only, is looked upon as one of the most important commercial centres of the future. Besides being the eastern terminus of the Trans-Siberian Railway, the Russian government has decided to make it an important naval station and a commercial port.

Agriculture.—No exact data are available for the extent of the cultivable area of Siberia. The agricultural zone, according to some authorities, embraces about 1,300,000 square miles, or 25 per cent. of the total area of Siberia, and contains the bulk of its population. Agriculture is mostly developed in the two governments of Tobolsk and Tomsk and in the three provinces of western Siberia, Irkutsk, and Yeniseisk. The principal crops of the two governments and three provinces named above for 1897 were as follows: Wheat, 71,000,000 poods; corn, 41,000,000 poods; oats, 52,000,000 poods, and potatoes, 26,000,000 poods. Besides the above-mentioned crops, there are also raised barley, hemp, and different kinds of vegetables. Out of a total area of 1,200,000,000 dessiatines (dessiatine equals 2.6997 acres), 1,150,000,000 dessiatines belong to the state, besides 42,500,000 dessiatines, constituting a part of the private domains of the royal family. The sale of government land is prohibited in four provinces of Siberia, but the government leases it to settlers on very advantageous terms. According to official reports, there were in 1899 only 1214 private holdings, with an aggregate area of 524,437 dessiatines. In no part of Siberia is it allowable for a single person to buy more than 400 dessiatines. Owing to the wild speculations in land which arose as a result of the Trans-Siberian Railway, the government passed a law in 1895 prohibiting the sale of any land situated within a distance of 100 versts (verst equals .663 mile) on either side of the line. According to the latest advices from Russia, there is a considerable agitation in official circles for the abolition of the law, as it is considered to be a hindrance to the development of territory adjoining the railway. During 1900 a great part of Siberia suffered from a famine, whose disastrous effect was severely felt. Under these circumstances the export of grain was out of question, as prices in Siberia stood higher than the prices of Siberian grain in the markets of European Russia. Cattle raising is carried on to a considerable extent, and the number of dairies has greatly increased during the last few years.

Industries.—Prior to the beginning of the construction of the Trans-Siberian Railway the industries of Siberia were almost entirely confined to gold mining. While it is still the principal industry, the Trans-Siberian Railway has introduced a new element in the industrial development of the territory. The principal minerals of Siberia include gold, silver, copper, iron, coal, and zinc. As a matter of fact, the mineral deposits of the territory have only been touched on the surface, and it remains for the Trans-Siberian Railway to develop the mineral riches of Siberia.

According to the census of 1897, there were in Siberia 4870 industrial establishments (excepting flour mills), employing 26,290 persons, and having an annual pro-

duction valued at over 20,000,000 rubles. Next to mining, perhaps the most important industries are fishing and hunting. The exports of fish from the island of Sakhalin alone in 1898 amounted to 3,600,000 poods of herring and 600,000 poods of other kinds. The most valuable furs are exported from Siberia to European Russia and to foreign countries. This industry, however, has been declining considerably for the last few years.

Commerce.—The commerce of Siberia, which is mostly with China, Corea, and Manchuria, is considered very extensive. No record, however, is kept of the trade, which is to a considerable extent carried on by barter. Besides its foreign trade, Siberia exports a considerable amount of commodities to European Russia. The principal exports are gold and other minerals, grain, fish, and furs.

In order to prepare competent officials for its future possessions in the Far East, the Russian government opened at the end of 1899 an institute at Vladivostok, in which the Japanese, Chinese, and Corean languages are taught. The students for the institute are to be selected from among the most promising pupils of the local gymnasium, but the institute receives also young men from outside, provided they possess exceptional linguistic abilities. See TRANS-SIBERIAN RAILWAY.

SIDGWICK, HENRY, D.C.L., LL.D., an educator and writer on philosophy, died at Witham, England, on August 28, 1900, at the age of 62. He became prælector of moral philosophy at Cambridge in 1875 and Knightbridge professor of moral philosophy in 1883, holding the latter post till within a few months of his death. Among his works may be mentioned: *Methods of Ethics* (1874), containing an admirable critique of the older utilitarianism; *Principles of Political Economy* (1883), and *The Elements of Politics* (1891), besides numerous articles in various reviews and magazines. He was one of the founders of Newnham College, and, together with Mrs. Sidgwick, he did much for the higher education of women in England.

SIERRA LEONE, a British crown colony, lying on the Atlantic coast of Africa, between French Guinea and Liberia, has an area of about 4000 square miles and a population of about 75,000, of whom only some 225 are whites. The British protectorate of Sierra Leone, extending inland about 180 miles, has an area estimated at 30,000 square miles. According to a British report published in 1900, however, the inhabitants of the colony numbered 100,000, and of the protectorate, 1,000,000. In 1897 there were about 70 schools, with an average attendance of over 6000; a government grant for education amounted to nearly £1500. The capital is Freetown, which has about 30,000 inhabitants and is the foremost seaport on the West African coast. The colony is administered by a governor, Colonel Sir Frederic Cardew, who is assisted by executive and legislative councils; and the protectorate by a commissioner for each of its five districts. Statistics of finance and commerce for 1899 are as follows: Revenue, £168,382; expenditure, £145,089; imports, £689,806; exports, £336,011.

In 1899 the source of about three-fourths of the revenue was customs duties. Of the imports about three-fourths came from Great Britain. The principal exports include palm kernels, kola nuts, rubber, and gum-copal. Of these Great Britain takes nearly one-half and Germany somewhat less than one-third; the latter country receives a large proportion of the palm kernel export.

In 1899 a railway was opened from Freetown on the coast to Songotown 32 miles distant; in 1900 an extension of 30 miles was opened to Rotofunk and another extension of 80 miles to Bo was begun. This road is of light construction and 2 feet 6 inches gauge.

SI-GNAN-FU. See CHINESE EMPIRE (paragraph Cities of China).

SILK MANUFACTURE. Forty-three silk mills were built in the United States in 1900, against 32 in 1899, 19 in 1898, 43 in 1897, and 17 in 1896. Of these 43 mills, 16 were in Pennsylvania and 17 in New Jersey. On the whole, however, the year was not a favorable one for silk manufactures, especially in the mills where figured silks are made. According to the *American Silk Review*, retail merchants were actually selling goods over the counters for a lower price than they could be produced in the mills. The general use of mercerized cotton has decreased the demand for lower grades of silk for lining materials. The importations of raw silk for 1900 amounted to \$45,000,000, against \$32,000,000 in 1899.

SILVER. The total output for the year in the United States is estimated at 60,478,276 troy ounces, valued at \$37,085,248. In 1899 the amount produced, as stated by the *Mineral Industry*, was 57,126,834 troy ounces, valued at \$34,036,168, while, according to the statistical record of the United States Geological Survey, the production amounted to 54,764,500 troy ounces, valued at \$32,858,700. The increase in the production of silver is due largely to an increase in the amount of copper and lead which have been refined by processes where silver is obtained as a by-

product. In addition to the ore mined in the United States, American refineries during 1900 produced from foreign ores and bullion 46,352,281 troy ounces of silver, valued at \$28,433,219. During the year ending December 31, 1900, the imports of silver into the United States amounted to \$39,780,105, while the exports during the same period amounted to \$66,221,664.

According to the director of the mint, the chief silver-producing countries of the world and the amount produced by each during the year 1899 are as follows: United States, \$32,858,700; Mexico, \$33,367,300; Canada, \$2,047,000; Australasia, \$7,612,000; Russia, \$80,900; Germany, \$3,745,200; Bolivia, \$6,506,400. It is estimated that the total output of silver for the year amounted to \$100,321,100, while the industrial consumption of the metal was \$24,595,600. The amount of silver coined in the United States during the years 1899 and 1900 is stated as follows by the Bureau of the Mint:

	1899.	1900.
Dollars	24,960,912	24,960,912.00
Half dollars.....	10,067,234	5,033,617.00
Quarter dollars.....	15,291,497	3,822,874.25
Dimes	24,779,182	2,477,918.20
Total silver.....	\$75,098,825	\$36,295,321.45

SIMPLON TUNNEL. See TUNNELS.

SKATING. The National Amateur Skating Association held the Eastern amateur championship races for 1900 at Downing Park Lake, Newburgh, N. Y., January 26-27. James Drury, of Montreal, won the 500-metre race (546.8 yards) in 0.55½; the 1500-metre (1641.4 yards) was won by E. A. Thomas, of Newburgh, 3.02; 3000-metre (3282.8 yards), Thomas, 5.32; 5000-metre (3 miles 188 yards), Thomas, 11.46; 10,000-metre (6 miles 376 yards), F. R. Sager, Newburgh, 24.55. The Western championships were won at St. Paul, Minn., February 10-11, as follows: 500-metre, Harry Perkins, St. Paul, 0.51¾; 1500-metre, Louis Johnson, St. Paul, 3.02¾; 5000-metre, Thomas McKeever, Merriam Park, 10.52; 10,000-metre, Perkins, 22.16¾. The metric distances were first adopted in 1899. The Canadian amateur skating championships were held at Montreal on February 3 under the auspices of the Canadian Skating Association with the following results: 220-yard, Frank Robson, Toronto, 0.21; half-mile, Robert Sonne, Montreal, 1.25; 1-mile, James Drury, Montreal, 3.00; 3-mile, E. A. Thomas, Newburgh, N. Y., 9.22; 5-mile, F. D. Gibbs, Newburgh, N. Y., 16.17. A 220-yard hurdle race and a mile race, skated backward, were also held. The three professional events were won by John Nilsson, of Minneapolis, as follows: 1-mile, 2.43¾; 2-mile, 5.33¾, breaking previous world's record of 5.51; 3-mile, 8.41¾, breaking previous world's record of 8.48¾. On the same day the speed skating championships of Europe were begun at Budapest. P. Oestlund, of Norway, one of the most wonderful skaters of the present day, vanquished the field, winning the 500-metre in 0.47¾, the 1500-metre in 2.50¾, the 5000-metre in 9.15¾, and the 10,000 in 25.25. But this record was insignificant compared to his performances at the international amateur championships held in Switzerland on February 12-15, in which he not only captured every race, but broke four world's records, as follows: 500-metre, 0.45¾; former record, 46¾; 1000-metre, 1.34; former record, 1.38; 1500-metre, 2.22¾; former record, 2.23¾; 5000-metre, 8.51¾; 10,000-metre, 17.50¾; former record, 17.55¾ (since 1885). At the world's amateur championship races, February 24-25, at Christiania, Norway, Oestlund won the 500-metre race in 0.46¾; but the 1500, 5000, and 10,000 metre races were won by E. Engelsaas, of Christiania, in 2.38¾, 9.34¾, and 20.09¾ respectively. The English amateur championship (about 1½ miles), February 10 at Littleport, was won by A. E. Tebbit, 5.30¾. Amateur figure-skating championships of the year were as follows: World's, Davos, Switzerland, February 10-11, G. Hugel, of Vienna, 338¾ points. American, New York City, March 15, Arthur G. Keane, New York, 108 points out of a possible 114. The method of scoring points differs here and abroad.

SKENE, ALEXANDER JOHNSTON CHALMERS, M.D., a celebrated gynecologist, died on July 4, 1900, at the age of 63 years. Born in Scotland, he studied medicine at King's College, Scotland, the University of Michigan, and the Long Island College Hospital, graduating in 1863. He became professor of gynecology at the Long Island College Hospital 1872, and after 1886 was dean of the faculty of that institution. He invented no less than twelve important surgical instruments and contributed much to medical literature, his *Treatise on the Diseases of Women* (1888) being a standard work. He was long president of the American Gynecological Society and of the Kings County Medical Society.

SMALLPOX AND VACCINATION. Smallpox was epidemic in 1900 in the United States, India, Russia, Quebec, Mexico, and Brazil, while England, France,

British Columbia, Formosa, Ontario, and New Brunswick suffered to a considerable extent, and many other countries reported several cases. In the countries where the facts can be ascertained an increase of smallpox followed a decrease in vaccination. It is stated by the health authorities of New York City that the disease since 1872 has appeared at intervals in waves, the crests of which have been 6 or 7 years apart. Early in January, 1900, reports of the presence of smallpox came from Alabama, Colorado, Delaware, Florida, Georgia, Illinois, Indiana, Kansas, Kentucky, Louisiana, Massachusetts, Minnesota, Missouri, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, Tennessee, Texas, Utah, Virginia, Washington, and West Virginia, and the disease progressed during the entire year in most of the States and Territories named, as well as invaded others.

In most instances prompt and rigorous quarantines were established as the dread disease appeared in new localities. In Maryland, at a railroad camp near Pinto, an armed guard surrounded 14 suspected cases, 5 genuine cases, and a resident physician, who were held till danger of the spread of the smallpox had passed. In Indian Territory a railway coach was sidetracked and converted into a detention quarantine station, having become infected by passengers. Kansas City collected her smallpox cases in St. George's Hospital, citizens being averse to the erection of a special hospital on a selected site. New York City removed her cases to the permanent contagious disease hospital on North Brother Island in the East River. At least 1,000,000 people living in Greater New York or in adjacent towns in New Jersey and Long Island had been vaccinated in New York City up to December 15. The council of Yukon, Alaska, ordered that every person in the Territory be vaccinated. About 12,000 people were in that section, and 6 Dawson physicians were sent out on the creeks to enforce the order. In August the conditions at Nome were grave, smallpox being prevalent among the tents that sheltered nearly 25,000 people. In Glasgow an epidemic started in July, apparently spreading from an eating-house, the wife of whose proprietor had died of smallpox unattended. During the year the authorities of Constantinople have made vaccination compulsory under penalty of a fine. See VITAL STATISTICS.

SMART, JAMES HENRY, A.M., LL.D., president of Purdue University, born at Centre Harbor, N. H., June 30, 1841, died February 21, 1900. He was connected with several Western educational institutions and commissions, being for many years a member of the Indiana State Board of Education and three times State superintendent of public instruction. He was president of Purdue from 1883 to the time of his death.

SMITH COLLEGE, Northampton, Mass., organized 1875, completed in the year 1900 its first quarter century. About \$50,000 were received in gifts during the year, of which \$20,000 came from Rodney Wallace and \$9000 from J. J. Albright to make up the deficiency in the cost of Seelye Hall, \$7000 as an addition to the Students' Building fund, and \$6925 to establish scholarships. Seelye Hall was completed during the year, and contains recitation rooms and accommodations for the college library. In addition to the new student residences obtained in 1899—namely, Tyler House, Haven House, and Wesley House—a new dwelling was building during 1900 to be known as Albright House. An attempt was again made during 1900 to tax the college property, which was unsuccessful. By the new scheme of study wider options will be given in the entrance requirements, and only one degree, A.B., will be given. The enrolment for the college year was 1118, a gain of 14: First class, 306; second class, 278; juniors, 273; seniors, 225; school of music, 11; school of art, 16; graduate students, 9. In the graduating class 107 received the degree of A.B., 112 B.L., 2 B.S., 4 B.M., and 2 A.M.

SMITHSONIAN INSTITUTION. See ANTHROPOLOGY IN AMERICA.

SMOKE PREVENTION. The movement to suppress the smoke nuisance is steadily gaining force. Many of our Western cities have within the last decade taken active steps toward smoke suppression, sometimes entrusting the work to the city Board of Health and sometimes appointing a special department for this work. On April 16, 1900, the State Legislature of Ohio passed an act providing that every steam boiler furnace in a city of the first or second class "shall be so constructed or altered . . . as to prevent the production and emission of smoke therefrom so far as the same is possible." Each mayor is required to appoint a supervising engineer, who may have an assistant if necessary, to inspect steam plants and impose fines in accordance with the law. The city of Cleveland at once began a campaign of smoke suppression under the leadership of Professor C. H. Benjamin, supervising engineer. It appears that a similar act was previously in force, applying to Cincinnati only.

SNAKE-BITE. See LEPROSY and SERUM THERAPY.

SOAPSTONE. Soapstone is used at the present time for a large number of pur-

poses, including bath and laundry tubs, fire-bricks for stoves and heaters, hearth-stones, mantels, sinks, griddles, slate-pencils, foundry facings, paper-making, lubricators for dressing skins and leather, and for pigments. It is, therefore, not surprising that the production should increase annually, although the price has decreased. The whole output of the United States for 1899 amounted to 24,765 short tons, valued at \$330,805, and was contributed by the following states in the order of their importance: Virginia, Georgia, Pennsylvania, and North Carolina, smaller quantities coming from several other States, including California, Maryland, Massachusetts, New Hampshire, and New Jersey. See TALC.

SOCIALISM. The aim of the present article is to mention, briefly, some of the leading events in the Socialist movement during the year.

International Socialist Congress.—The congress assembled at Paris, September 23 to 27, 1900. It did not commit itself on the leading question of the day among Socialists—that is, to what extent Socialists ought to ally themselves with the *bourgeois* political parties, but in general the spirit of the congress indicated a change from the old policy of abstaining from active participation in practical affairs. At the same time, in reference to Millerand's entry into the French cabinet, the view of the congress was that such a course could not be considered a normal beginning of "the conquest of the political power." An important step was taken by the establishment of a permanent central international bureau to fill the gap left by the old "International," with the object of securing unity of action, if possible, among the Socialist parties of the world as to the foreign policy they are to urge on their respective governments, and as to labor legislation and the international exchange of information in regard to the working classes.

International Congress of Socialist Students and Graduates.—The third congress of Socialist students also met in Paris, September 20 to 22, 1900, and comprised delegates from the chief continental states. On the question of Socialist propaganda in universities the congress decided that such propaganda "should appeal especially to the scientific spirit, to the moral sentiments, and to the democratic aspirations of the students." As to the rôle of the Socialist students in the labor movement it was the view of the congress that these students should participate in all investigations of the condition of the working people. They were also advised to carry on a campaign against militarism, participate in university-extension movements, to observe total abstinence from alcoholic liquors, found Socialist societies in their professions and among the working classes, and to take other steps toward the furtherance of their cause. The next congress is to meet not later than 1903 at Amsterdam.

Austria.—In spite of the efforts of the government to check the movement in Austria, the Socialist vote in the late parliamentary election increased from 88,000 to 95,000. The party in Austria is divided into several sections, of which the strongest are the German and Bohemian, the former having a membership of 118,863, and the latter of 48,683. The other sections are the Polish, Slavonian, and Ruthenian.

Belgium.—In the parliamentary elections the Socialists polled 470,675 votes, electing 33 members. At the special congress of the Belgian Labor Party, held at Brussels in November, 1900, it was unanimously decided to begin a vigorous campaign for equal suffrage for men and women as soon as parliament met.

England.—The Socialist movement in England is represented by the Social Democratic Federation, the Independent Labor Party, and the Fabian Society. Thus far there has been very little unity of action among them, but pursuant to a resolution of the Plymouth Trade Union Congress in 1899, an attempt has been made to create a "Labor Representation Committee" to serve as a sort of bond of union between the different organizations. Delegates from the organizations met in February, 1900, but were not successful in rallying the entire trade union vote. For the present the committee comprises representatives of the Socialists and several of the minor unions, together with the three strong organizations of the Gas Workers, Railway Servants, and the Amalgamated Engineers.

France.—The division in the Socialist party, caused by the Dreyfus affair and the entrance of Millerand into the republican ministry, continued, in spite of the effort for unity in 1899. The second national congress of the Socialist party, which met at Paris at the close of September, did not succeed in healing the breach, although it declared for "definite and complete unity of the Socialist party within the briefest possible time" and for the formation of a general committee to work out a scheme for unification. The Socialists were very successful in the municipal elections in 1900. In Paris their votes have increased from 98,000 in 1896 to 126,000 in 1900. In Lyons they elected their candidate as mayor, and in many other large cities they obtained majorities.

Germany.—The annual congress of the German Social democracy was held at Mainz. The chief points discussed were the trade-union policy of the party and the question of participating in the elections to the state diets. As to the trade unions

it was the opinion of the majority that the Socialist trade unions ought to be neutralized, that is, thrown open to men of all political parties and religious views. There was a sharp debate on this point, but the opposing minority finally agreed to abide by the decision of the congress. As to the policy in the elections to the diets, the congress decided that the Socialists in each State should put up candidates for the local diets. The next congress is to meet at Lübeck in September, 1901.

Italy.—In the April election of 1900 the Socialists polled 215,841 votes, which figures illustrate the extraordinary growth of the party, the votes in 1895 being only 70,359. The biennial congress of Italian Socialists met at Rome on September 8-11, 1900. Here, as in the international congress, the liveliest discussion was on the subject of the relations of Socialists to the *bourgeois* parties. Some held that the political crisis in Italy being over, it was the duty of the Socialists to return to their old policy of strict revolutionary propaganda, and independence of party alliances. This, however, was not the opinion of the majority and the congress decided in favor of granting the local branches of the party the right to form alliances with the extreme radicals and the republicans, subject to a veto on the part of the national council, if the alliances seemed against the interest of the party.

SOCIAL SETTLEMENTS. There appeared during the year a new edition (fourth) of the Bibliography of College, Social, University, and Church Settlements, compiled by Mrs. Frank H. Montgomery, of Chicago, Ill., for the College Settlements Association. There will be found in this publication a selected bibliography of settlements, giving a list of the chief books and references to the leading magazine articles relating to the several settlements in this country and abroad; also a list of the books considered by the head workers in settlements as suitable for a settlement library. A brief statement is furnished for 104 settlements, arranged alphabetically, for the United States, and a similar statement for the leading settlements of England, France, and other countries. Many social settlements have departed from the original idea of a settlement and represent older types of work, but slightly transformed under a new and more popular name. Many church missions have now adopted the name of settlement. There is no uniformity in methods pursued and various plans of organization must be studied separately and interpreted in the light of the work each settlement is doing.

Miss Vida D. Scudder, president of the College Settlements Association, in the annual report of that association for 1900, emphasizes the spirit of discontent and protest as a fundamental part of the settlement ideal. "They (the settlements) have been hot centres of new thought, they have swung free of the established order, in a very real sense they have been alien and antagonistic to it." "They sprang from a conviction which they nourish and strengthen in nearly every thoughtful person who enters them, that the conditions of life forced by our civilization upon vast numbers of the working classes, especially on the poor in our great cities, are undemocratic, unchristian, unrighteous; that only the surrender of life itself, probably of many lives for more than one generation, can change them: but that, in the name of the American democracy, changed they must be.

"To the question, How? By what means? our settlements give no direct answer. They stimulate and quicken." "They enter into sympathetic relations with the unconventional, discredited forces ignored of the privileged classes, that are making for reform. They instigate municipal action of a constructive kind. Even while they work most actively at the application of palliatives, they clearly recognize their nature; and are never satisfied with presenting instruction in art, literature, cooking, gymnastics, to a population staggering under burdens well-nigh heavier than can be borne." "Only as they sting to an impassioned, rational discontent with existing conditions, only as they resist the seductive encroachments of social fatalism, and remain full of hope that never wavers, are they true to their initial impulse and to their best ideal."

Another worker, long identified with the settlement movement, in the report of the College Settlements Association for 1900, urges that the settlements must assume a more aggressive attitude, that they must not be afraid of the spectre of socialism, but must attack the roots of the problem of tenement-house life and crowded districts in the cities, and also that they must realize that the question of wages and steady employment is a great economic problem, presenting itself in regions where settlements are located.

All of the settlements are producing some well-considered studies of the life in which they are centred; thus, the Year-book of the University Settlement Society of New York contains a series of papers on the street life, home life, amusements, societies and organizations of the district, prepared on the basis of careful study and observation by the residents of the settlement. More extensive papers are in process of preparation in almost all of the settlements and at least one other settlement, located in a large city, contemplates the publication of a volume corresponding somewhat with those known as Hull House Maps and Papers, and the City Wilderness, treating of Chicago and Boston respectively.

SOCIETY FOR THE PROMOTION OF AGRICULTURAL SCIENCE. See AGRICULTURE.

SOCIETY ISLANDS, a French colony in Oceania, comprising the islands of Tahiti, Moorea, and a few smaller islands, with a total area of over 600 square miles and a population of about 12,000, mostly Polynesians. The capital, Papeete, on Tahiti, has a population of 4282 inhabitants, of whom over 50 per cent. are French. The soil of the colony is very fertile and well adapted for the cultivation of certain cereals, sugar-cane, and tobacco. The agricultural development of the colony, however, is very backward on account of the lack of capital and efficient labor. The principal products are copra, mother-of-pearl shells, and vanilla. The exports and imports for 1899 amounted to £127,876 and £113,324 respectively. Nearly 50 per cent. of the total commerce during the year was with the United States.

SOCIOLOGY. The year 1900 began with a contribution to sociology by Professor Franklin H. Giddings, who, in a volume of essays, entitled *Democracy and Empire*, has succeeded, to even a greater extent than in his more systematic works, in focusing public attention upon the sociological principles underlying current discussion and interests. The particular essays which gave the title of the volume, because of their timeliness, furnish an analysis of the problem of territorial expansion which the author views in its relation to democracy and to the psychology of society in its fundamental economic and ethical aspects. "The Democratic Empire" is the title of the first essay, and really summarizes the argument of the entire volume. The two most powerful nations of the world have been continually extending their territorial boundaries, and at the same time becoming year by year more democratic in their local life, in their general legislation, and in their social institutions. How may this be explained? Before the dawn of history, mankind learned one fundamental lesson: namely, that social cohesion, unity of purpose, and practical co-operation depended upon some kind of similarity among the co-operating individuals. The first kind recognized was that of blood kinship. Gradually, however, a mental homogeneity developed in the place of the former physical homogeneity, out of which grew the national state, possessing a certain amount of unity of language and religion. Then it was thought that liberty could grow only in states of relatively small dimensions and peopled by persons substantially of one type of mind. Hence the emphasis laid upon local self-government. But economic changes soon wrought havoc with this ideal. The great changes of the last century convinced people that some mode of unity sufficient to hold them together existed in spite of real diversity of interests, ideas, and nationalities, and made their political and industrial organization as firm as that of any ancient tribe or nation. The new homogeneity is an ethical one, which has displaced kinship, faith, and habit as a cohesive bond, and "consists in an economic loyalty to the common judgment and will, in a common willingness to share a common destiny, and in a common conviction of the priceless value of individual, religious, and legal liberty." Hence, a nation may make itself the nucleus of an empire, continuing to annex territory and yet continuing to be democratic, provided that "as it lengthens the reach of government it must curtail the functions of government." It is to the working out of the principles of this philosophy in all its manifold applications to life and education, and with a rich vein of illustration, that Professor Giddings has devoted the several chapters of his most popular volume on *Democracy and Empire*.

Followers of Herbert Spencer will be pleased to know of another of Professor Giddings's essays, which appeared in the *International Monthly* for November, 1900, entitled "Modern Sociology," in which he classifies a large part of recent sociological literature, tracing it all back to Spencer, and showing its relation to his work, which he regards as the beginning of modern sociology. He has also supplied a much needed interpretation of the organic unity of Mr. Spencer's sociological readings.

Perhaps the most interesting department of sociological work at the present time, and that in which a large number of economists are interested, is the study in social origins, especially in the beginnings of institutions, traced in their relation to economic and other objective factors in development. Certainly the most suggestive piece of work of this kind that has been done was that attempted by Professor Patten, in his work on the *Development of English Thought*, which traced the movement of social life and institutions in England through the last three centuries. This work appeared in the year 1899. Professor Lindley M. Keasby, of Bryn Mawr, who has been working along similar lines, but with the data of primitive society more particularly in mind, published in the *International Monthly* for April, 1900, an article on the Institution of Society, which marks a new and interesting departure, and one which, like all new departures, perhaps over-estimates the relative weight of some of its conclusions. Some of the results of Professor Keasby's inquiry are summed up in the following words: "From the present vantage ground, it seems to me possible to distinguish, therefore, two collective units and a transitional form, whose evolutionary order from family to

tribe, to clan, is along a distinctly marked economic line. The domestic union—which is at once the most intimate and the least complex—lies in the extremity of a field that exact science has already traversed. Clustered about this is the tribal aggregate which has no collective identity save sameness of place and race. Through this concourse co-operation strikes a path that leads to the permanent productive clan—which, as an association, is at least co-ordinated, if not yet complete—and by this change in the method of organization the inquiry is brought within the confines of politics and political economy. These are fields that social science has repeatedly explored; there can be no more doubt, therefore, that this is the right road to society. Looking back over the ground, co-operation clearly marks the turning point toward the social way. Further forward, we cannot at present proceed. It has been merely a reconnaissance, and not a thoroughgoing inquiry; but our survey has not been entirely in vain if on our return we may affirm: Biology affords us the family, Sociology properly begins with the clan.

"In taking co-operation as the first stage in the process of socialization, I do not mean to infer that society, as we now know it, is constituted solely upon this principle. During the course of civilization many other elements have entered in to alter the social constitution. Since then the co-operative principle has passed through many vicissitudes, and yet in many phases of social life it prevails, not always with the same force as in early clan life, because in the modern struggle for existence there is no such universal occasion for the combined effort of males. Along certain lines of endeavor, however, the co-operative plan is still essential, pre-eminently in military activity, and to a certain extent also in every-day business life. Modern political institutions are likewise rooted in the original organization of the clan, and that is why they are still one-sided. It is, indeed, a significant fact that women, who have no clan tradition of their own to fall back upon, are pre-eminently family folk and domestic economists, while their husbands remain clansmen in their productive life, and are only as consumers domestic.

"Enough has been said, I hope, to show that the social sentiment characteristic of modern civilization is neither universal nor primordial, but simply an elaboration of an earlier economic instinct. Society, as we know it historically, is neither an original institution, nor is it rooted in the natural family. Sociality arose in the first place out of the economic necessity of productive co-operation among certain groups of males, and established in this way, it has naturally grown to include, not the whole human race, as some abstract theorists suppose, but only particular nations of men who have long lived together in one place and gradually learned the advantages of association."

At the meeting of the American Social Science Association, held in Washington in May, 1900, several papers were presented for discussion, treating of social changes during the last half century. The first one, by Mr. F. B. Sanborn, took up the social changes in the United States, characterizing the period under review as the era of machinery and combination. "The sewing machine, the reaper and mower, the electric telegraph and telephone, the electric motor and heater and lighter, the combination of giant power and feminine delicacy of touch in the factory machinery, the science of metallurgy, the printing press, and every form of human triumph over the brute existence or unwilling co-operation of natural forces—these have been mainly the achievements of the last fifty years. They have wrought changes, such as no former period of thrice its length has ever seen; they have brought the ends of the earth into close communication with each other, and they have left few of the ancient mysteries of geography to be explored. They have simplified and vulgarized the problems of politics: little is left now, outside of Asia and Africa (if even there), of the 'divinity that doth hedge a king'; the Lord's Anointed has ceased to draw on the oil flask for his title to sovereignty; and the arcana of parliamentary government have been opened to the competition of all bidders." Mr. Sanborn calls attention to the greatest change in the Southern States as that of labor from a servile to a wage-earning basis; to another change by which human life has been broadened: namely, the improvement of transportation, which in its results has to some extent counteracted the narrowing tendencies of the factory system. Lastly the author comments upon some of the consequences of increased ease of living. At this same meeting, Mr. E. W. Sanborn, of New York City, presented a paper on Social Changes in New England, in which he said that the praise of old-fashioned social life will hardly bear examination, and in which he dwelt with favor upon the recent industrial development of New England, which he believed had not yet come to a halt. Mrs. Orra Langhorne, of Lynchburg, Va., discussed the social changes in Virginia, pointing out the fact that the greatest change had been in the land system, the breaking up of the great estates, and the banishing of the type of country gentleman. In their place have come new industries, especially notable among which are the canning factories and the creameries, the poultry farms and floral gardens.

The race problems of the South came in for an unusual share of discussion during the year 1900. Not only by Northern and Southern white men and black men were these topics discussed at the usual conferences at Tuskegee, Hampton, and Capon Springs, but also in a special convention under the auspices of the Southern Society for the Promotion of the Study of Race Conditions and Problems in the South. (See ALABAMA, paragraph Montgomery Conference.) This conference, which was organized by Southern white men, was known as the Montgomery Conference, being held in May, 1900, at one of the capitals of the Southern Confederacy, and was one of the most promising sociological movements of recent times.

The volume of proceedings of this first annual meeting has been published by the society, which has established a permanent bureau for the dissemination of literature, with offices in Montgomery, Ala., and constitutes an important contribution to this subject.

Students of sociology will be greatly interested in a series of monographs on American Social Economics, published under the editorship of Herbert B. Adams, for the Department of Social Economy for the United States Commission for the Paris Exposition. Twenty numbers were issued and a limited supply distributed at the Exposition. An outline of the Social Economy Exhibit at the Paris Exposition by Richard Waterman, Jr., constituted the first number. Mr. W. F. Willoughby, of the Department of Labor at Washington, contributed several numbers, dealing with such topics as Bureau of Labor Statistics, Employment Bureaus, Inspection of Factories and Workshops and Mines, the Sweating System, Arbitration, and Building and Loan Associations. Other monographs were as follows: Two by Dr. E. D. Jones on The Country and the People, and on Resources and Industries; Commercial Institutions by W. H. Schoff, Cooperation and Profit Sharing by N. P. Gilman, the Housing Problem by Lawrence Veiller, Religious Movements by Josiah Strong, Municipal Movements by F. W. Speirs, Industrial Betterment by W. H. Tolman, Y. M. C. A. Work by H. S. Ninde, Social Economic Legislation by R. H. Whitten, Public Hygiene by S. W. Abbott, and Salvation Army Work by Booth Tucker.

SOCOTRA. See ZOOLOGICAL LITERATURE.

SOLOVYÓFF, VLADÍMIR SERGÉYEVICH, Russian philosopher, publicist and poet, died August 13, 1900. He was born on January 28, 1853, and in 1874 he obtained the master's degree for his *Crisis of Western Philosophy*, being appointed docent in philosophy and later to a position in the Ministry of Public Instruction. After his doctor's dissertation, *Criticism of Abstract Principles* (1880), he became docent at the University of St. Petersburg. An oration against capital punishment (March, 1881, when Alexander II. was killed) was the chief reason of his retirement from lectureship and the post in the ministry, in 1882. As a public lecturer he reappeared again toward the end of the 90's, attracting great crowds of hearers. As early as 1890 he called attention to the inevitable conflict of "Panmongolism" and Mohammedanism with Christianity, and how can the latter triumph without fighting? And his last words in print were about the conflict with China. As a poet Solovyoff was a lyric, somewhat mystically inclined, but decidedly opposed to "pure art" and the decadents, on whom he spared no darts of sarcasm. Among his works, which would fill dozens of volumes, the most important are: *Philosophical Principles of Perfect Knowledge* (1877); *La Russie et l'Eglise Universelle* (Paris, 1889); *An Apology for Good* (second edition, Moscow, 1899); *The National Question in Russia*, a collection of separate essays, in two volumes, besides many translations of philosophical works.

SOMALILAND. The most eastern part of Africa, extending or bordering the Gulf of Aden and the Indian Ocean, consists of 3 dependencies belonging to Great Britain, France, and Italy.

Somali Coast is a British protectorate lying between the French and Italian dependencies. Its estimated area is 68,000 square miles and its population, though not definitely known, may be placed at about 240,000. The aggregate foreign trade for the fiscal year 1899 amounted to about \$3,925,000. One of the principal imports is cotton goods, mostly supplied by Americans. Trade is increasing, but it appears that the railway under construction by the French from Jiboutil to Harar is threatening a part of the trade with Abyssinia.

Somali Coast and *Obock*, a protectorate and a colony respectively of France, have a combined area of about 5000 square miles and an estimated population of 22,000. French influence, however, extends for a considerable distance into the interior, embracing an area of perhaps 40,000 square miles and a population of 200,000. The direct trade is largely with France. A railway has been projected from Jiboutil to Harar and some 50 miles have already been constructed.

Italian Somaliland, which extends southward to the Juba River, has an area of about 100,000 square miles and an estimated population of 400,000. The Italian

government has given (1899) the administration of both the towns and the hinterland to the Italian Trading Company of Benadir.

SONS OF THE AMERICAN REVOLUTION, organized 1889, is similar in purpose to the Sons of the Revolution. Two unsuccessful attempts have been made to amalgamate the two organizations. The society had a membership on April 30, 1900, of 9671. There are 38 State societies, one in the District of Columbia, and one in Hawaii. President-general, J. C. Breckinridge, U. S. A.; secretary-general, Samuel E. Gross, Chicago, Ill.

SONS OF THE REVOLUTION, a society first organized in New York in 1875, comprising only the male descendants over 21 years old, of a person who was a "military, naval, or marine officer, soldier or sailor, or official in the service of any one of the thirteen original colonies or States, or of the national government, between April 19, 1775, and the same day in 1783. The last triennial meeting was held at Denver, Col., April 19, 1899. The next is to be held in Washington, D. C., April 19, 1902. There are 30 State societies and one in the District of Columbia, with over 7000 members. General president, ex-Governor John Lee Carroll, Maryland; general secretary, J. M. Montgomery, New York.

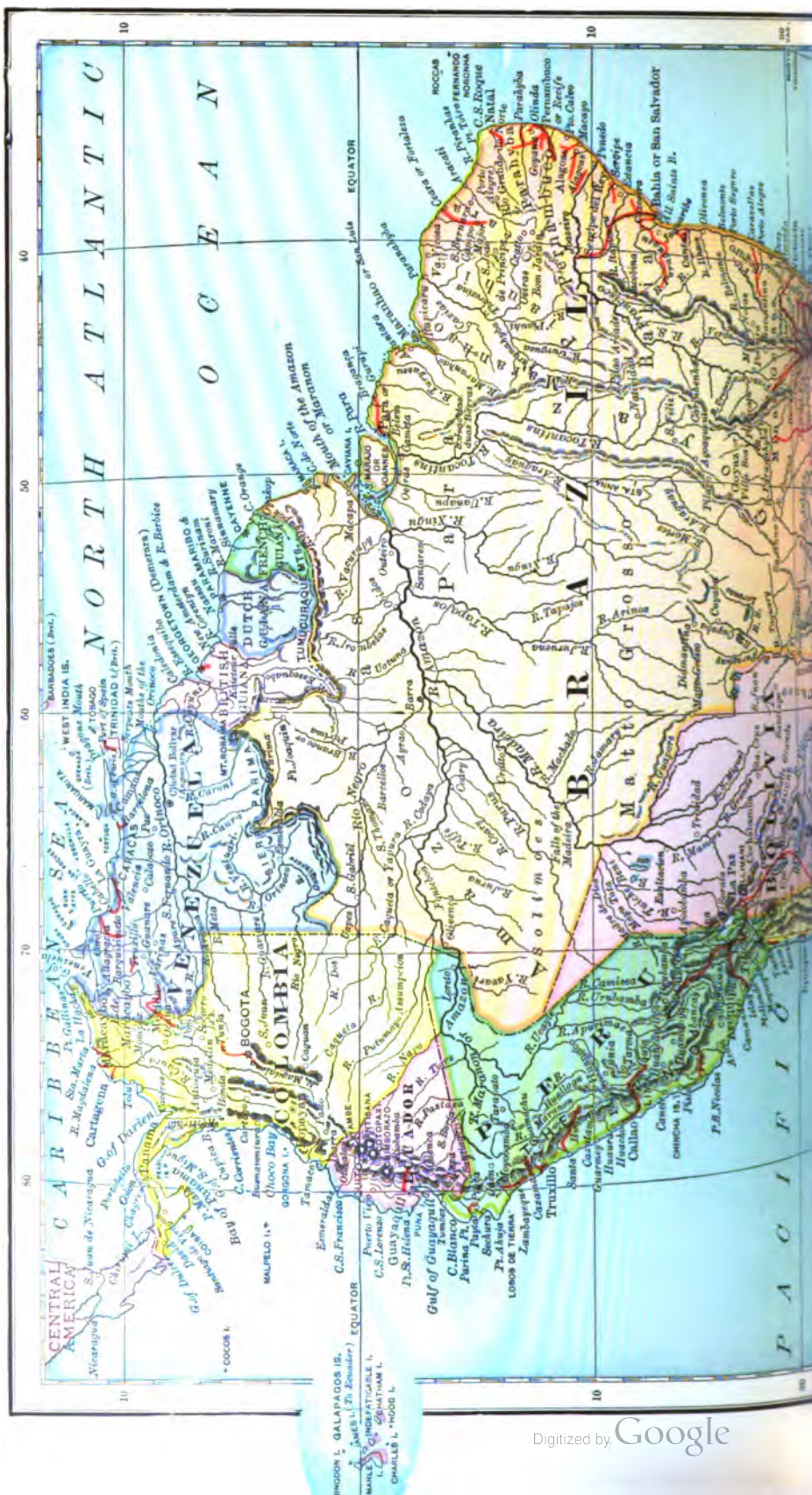
SOSON. A new food product, much used in 1900, is sosen. This is a dry, odorless, tasteless, concentrated meat. It occurs as a light yellowish-brown powder which is not hygroscopic. Its analysis, according to Professor König Münster, is as follows: Water, 4.92; nitrogenous matter (albumen), 93.66; ether, 0.30; and ash, 1.12. When calculated for the dry substance the pure albumen amounts to 98.5 per cent. of the product. It contains, therefore, 7 per cent. more albumen than tropon, and 21 per cent. more than plasmon. Ordinary meat contains 20 per cent. of albumen, a small amount of fat, extractive matter and salts, and nearly 80 per cent. of water. A pound of sosen is calculated to be equal in value to 5½ pounds of beef, or 13 litres of milk, or 5¼ pounds of potatoes. Sosen is said to be entirely free from gelatine. It is used as a food in cancer, tuberculosis, anæmia, malnutrition, gout, diabetes and obesity.

SOUDAN. See FRENCH SOUDAN and EGYPT (paragraph Egyptian Soudan).

SOUTH AMERICA. The present conditions of the countries of South America are stated in the articles on the countries themselves. This article deals only with the continent as a whole. Immigration to South America, which in general is comparatively small, is largest in Argentina and Brazil. In the former country Italians are especially numerous, and in the southern Brazilian states Germans are so much in the ascendancy that the German language is spoken throughout large districts.

Commerce.—The United States, Great Britain, Germany, and France lead in the foreign trade, with Germany, especially, increasing in importance as a factor. The total annual exports are reported to approximate \$450,000,000 and the imports, \$350,000,000. The value of South American exports to Great Britain was \$48,487,427 in 1898 and \$60,997,490 in 1899; the imports from Great Britain were valued for the two years at \$49,789,254 and \$50,030,579 respectively. In 1870 the value of goods imported from the United States by the South American countries was \$18,200,587, and in 1899, \$35,659,902, an increase of 96 per cent.; during the same period the exports to the United States increased from \$42,963,841 to \$86,587,893, a gain of 101 per cent. The imports from the United States in the fiscal year 1900 were valued at \$38,945,721, which shows a gain of less than half of 1 per cent. over 1899. In the fiscal year 1900 South American exports to the United States amounted to \$93,635,134, an increase of about 4½ per cent. over the figures for 1899.

COUNTRY.	IMPORTS FROM U. S.		EXPORTS TO U. S.	
	1899.	1900.	1899.	1900.
Argentina.....	\$9,563,510	\$11,558,237	\$5,112,561	\$8,114,904
Bolivia.....	81,298	50,233	22	82
Brazil.....	12,289,036	11,573,119	57,873,747	58,073,497
Chile.....	2,107,194	3,367,363	2,942,973	7,051,195
Colombia.....	3,042,064	2,710,686	5,126,731	4,307,614
Ecuador.....	882,591	1,918,008	1,054,653	1,584,378
Gulana, British.....	1,749,545	1,912,814	3,500,207	3,736,358
" Dutch.....	443,737	491,236	1,651,009	1,230,412
" French.....	170,090	195,037	37,320	37,364
Paraguay.....	10,751	4,884	160	.....
Peru.....	1,326,650	1,662,475	1,496,978	2,122,540
Uruguay.....	1,242,822	1,816,861	1,281,109	1,848,077
Venezuela.....	2,851,684	2,452,797	6,507,847	5,500,619
Total.....	\$35,659,902	\$38,945,721	\$86,587,893	\$93,635,134



International Troubles.—In the fall of 1900 the Chilean government demanded that Bolivia relinquish all claim to the Pacific province of Antofagasta, which the latter had mortgaged after the war of 1883. Chile, however, offered Bolivia the use of a port with the privilege of imposing custom duties. The proposals were not accepted by Bolivia. Argentina and Peru strongly sympathized with Bolivia, and it was reported that a combination had been formed to defeat Chile's aims.

The Madrid Conference.—On November 11, 1900, there convened at Madrid, Spain, a conference composed of representatives of Spain, Portugal, and the Latin countries of America, except Bolivia. The object of the meeting was to bring about more cordial relations between the Latin-American republics and to strengthen the sympathy arising from racial similarity and augment commercial development between them and Spain. Vigorous attacks were made on the Spanish-American treaty of Paris. For some time there has seemed to be a feeling of distrust toward the United States on the part of portions of Latin America. The significance of the Madrid conference may have been overestimated, but it was regarded with some disfavor in the United States press, which remarked upon the shortsightedness of the small republics in looking for aid to Spain. The most important measure adopted at the Madrid conference was a plan for compulsory arbitration between the republics. The Chilean delegation protested against this measure, and it is difficult to see how its provisions can be carried out, especially in view of the natural instability of the Latin-American peoples and the strained situation already existing between several of the republics.

SOUTH AUSTRALIA, a state of the Australian commonwealth under the constitution taking effect January 1, 1901, extends through the central part of the continent from the north to the south coast, touching Queensland, New South Wales, and Victoria on the east and western Australia on the west. The capital is Adelaide, with a population, including the suburbs, of about 150,000.

Area, Population, and Education.—South Australia besides the state proper includes the Northern Territory, added in 1863; the total estimated area is 903,690 square miles. The population of the entire state in 1900 was estimated at 370,700. Immigration and emigration are about equal. There is no established church. The leading denominations, named in the order of their numerical importance, are Anglican, Wesleyan, and other Methodist, Roman Catholic, Lutheran, Presbyterian, and Baptist. Education, which is controlled by the state, is free and nominally compulsory. The latest reports show that there are 677 state schools, with 1283 teachers and 62,316 pupils, the expenditure in 1899 being £139,682. There are about 240 private schools, with upward of 12,000 pupils, and a number of denominational secondary schools. The University of Adelaide has about 300 students. There is a school of mines and industries, and a training college for teachers.

Government and Finance.—The form of government in South Australia was not changed by the adoption of the new constitution of the federated Australian commonwealth. (See AUSTRALIAN FEDERATION.) The constitution of South Australia, dating from 1856, places the executive authority with a governor (the Right Hon. Lord Tennyson since February, 1899), who is appointed by the crown, and is assisted by a ministry of six members responsible to the legislature. The legislative power is vested in a legislature of two houses, the legislative council and the house of assembly, members of the former, 24 in number, being elected by popular vote for terms of nine years, and members of the latter, 54 in number, being elected in the same manner for terms of three years. Suffrage is held by both men and women. The premier and treasurer since December, 1899, has been the Hon. F. W. Holder. There are inferior and circuit courts and a supreme court, consisting of a chief justice and two puisne judges.

Revenue accrues mainly from customs, internal imposts, railways, posts and telegraphs; the chief items of expenditure are for public works, railways, and interest on the public debt. The revenue and expenditure for 1899 were £2,665,477 and £2,632,840 respectively, and the revenue for 1900 was £2,763,168. The expenditure for 1900 was estimated at £2,711,140. The public debt in 1899 amounted to £24,916,310, of which about three-fourths has been expended on railways, water-works, and telegraphs.

Industries and Commerce.—The principal industries are agriculture and cattle-raising, and mining has become of some importance. The southern part of the country is fertile, being especially adapted to wheat culture, but farther north there are large areas of desert land. The wheat production in 1898 amounted to about 18,779,000 bushels. In the year 1896-97, 1,473,200 gallons of wine were produced, of which 391,228 gallons were exported; in 1898-99, 1,080,800, of which 507,065 gallons were exported. Other agricultural products are oats, barley, potatoes, oranges, lemons, almonds, olives, and other fruits. In 1899 the estimated number of sheep in the state was 5,667,283; cattle, 275,794; horses, 168,695. The principal mineral deposits hitherto discovered are copper and silver, but gold, lead, manganese, bismuth,

iron, and coal are known to exist. The commerce of South Australia is chiefly with Great Britain and British possessions. Of the imports accredited to other countries—about £667,500 in 1898—nearly one-half came from the United States. The total imports and exports in 1899 were £6,883,958 and £8,388,396 respectively. Of the imports and exports for 1899 the British Empire was credited with 88.5 per cent. and 83 per cent. respectively.

SOUTH CAROLINA, a southern Atlantic State of the United States, has an area of 30,570 square miles. The capital is Columbia.

Mineralogy.—Within the past three years quarrying has made rapid strides in this State. The value of the total output of granite in 1897 was only \$37,820; in 1898 it increased to \$169,518, and in 1899, to \$361,034. There was a decrease in the production of limestone for 1899, the total value being about \$17,650, as compared with \$34,000 in 1898. The estimated amount of gold mined in 1900 was 5932 fine ounces, valued at \$122,625; and of silver, 395 fine ounces, value, \$241. During the twelve months from December 1, 1899, to November 30, 1900, there were 77,692 tons of phosphate shipped, which yielded a total royalty to the State of \$23,461.

Agriculture.—The total commercial crop of cotton for the season 1899-1900 was only 830,714 bales, as compared with 1,035,414 bales for the season ending August 31, 1899. The official preliminary estimate of the cotton crop for 1900-01 placed the total acreage at 2,367,000 acres, and the yield at 167 pounds of lint cotton per acre. The following shows the production and value of other crops for the calendar year 1900: Corn, 13,129,137 bushels, \$8,402,648; wheat, 2,142,828 bushels, \$2,164,256; oats, 4,023,149 bushels, \$1,931,112; rye, 29,205 bushels, \$30,728; potatoes, 335,946 bushels, \$335,946; and hay, 192,453 tons, \$2,213,210. The wheat of South Carolina brought a better price in 1900 than that of any other State, and only Florida and New Mexico surpassed her in the value of potatoes per bushel. Within a few years it has been demonstrated that tea can be successfully cultivated in South Carolina. About 1890 Dr. C. U. Shepard began experimenting with this plant on his estate near Summerville. Sufficient time has now elapsed to prove the complete success of his experiments. Dr. Shepard is now producing excellent grades of tea, which he sells at a considerable profit, and yet at prices below what is paid for imported tea. He has recently increased the area devoted to tea culture from 60 to 75 acres. Live stock in 1900, as returned by the tax assessors, comprised: Horses, 73,282, valued at \$2,967,386; mules and asses, 96,360, \$4,142,333; cattle, 213,233, \$1,882,666; sheep and goats, 52,548, \$53,525; and hogs, 228,374, \$405,772.

Industries.—The establishment of textile mills in different parts of the State continues to progress rapidly. During 1900, 27 new cotton mills, containing an aggregate of 317,708 spindles and 6500 looms, were built. The Olympia Cotton Mills, at Columbia, recently completed, is one of the largest cotton manufacturing plants under one roof in the world. In 1899 there were 10 manufacturers of cigars and 8 of tobacco, and their combined output for the calendar year was 659,532 cigars, and 4116 pounds of tobacco. The number of grain and fruit distilleries in operation was 40, and during the fiscal year ending June 30, 1900, the amount of fruit brandy produced was 256 gallons; distilled spirits gauged, 236,020 gallons; and fermented liquors produced, 5985 barrels. During 1900 there were 37 commercial and business failures, or about one-half of one per cent. of the 7792 business concerns in the State. In 1899 the number of failures was 74—about 1 per cent. of the total number of business concerns.

Commerce.—During the fiscal year ending June 30, 1900, the imports of merchandise at Charleston aggregated in value \$1,124,671; exports, \$7,151,720; imports of gold, \$333; exports of merchandise at Beaufort, \$81,042; exports, \$189,908; total imports of merchandise \$1,205,113; total exports, \$7,341,628; total foreign trade, \$8,547,074, a decrease in a year of \$1,502,222.

Railways.—The total new railway construction reported for the calendar year 1900 amounted to 172.76 miles. The tax assessors report the total mileage at 2830.43, valued at \$24,518,485. The total assessed value of all railroad property in 1900 was \$25,359,273, and the total taxes, \$341,000.90.

Banks.—On October 31, 1900, there were 24 national banks, of which 18 were in operation, 5 in liquidation, and 1 was insolvent. The capital stock aggregated \$2,095,500; circulation outstanding, \$1,505,149; deposits, \$5,692,024; and reserve held, \$883,097. The State banks, June 30, 1900, numbered 27, and had capital, \$1,307,224; deposits, \$3,263,144; and resources, \$5,545,443; and stock savings banks, 11, with capital, \$628,150; depositors (estimated), 25,150; deposits, \$5,086,451; and resources, \$6,694,659.

Finances.—The balance in the State treasury, January 1, 1900, was \$498,986; receipts from all sources during the calendar year 1900, \$3,253,853; total, \$3,752,839; expenditures during the calendar year 1900, \$3,137,953; balance, December 31, 1900, \$614,886. The assessed valuations for 1900 were: Real estate, \$102,137,777; personal property, \$53,428,047; railroad property, \$25,359,273; total, \$180,925,097. The in-

crease in assessment over 1899 is as follows: Realty, \$1,067,636; personal property, \$2,956,278; railroad property, \$478,895; total, \$4,502,809. The total funded debt, December 31, 1900, was \$6,506,569.

Education.—In 1899 the estimated school population was 487,200; enrolment in public schools, 269,875; and average daily attendance, 147,799. There were 4046 buildings used as schoolhouses, and the estimated value of all public school-property was \$845,596. The total school revenue was \$728,455; and expenditures, \$769,815, of which \$647,601 was for teachers' and superintendents' salaries. The average expenditure per pupil for the whole school year was \$3.96—the lowest average reported by any State for 1899. There were 99 public high schools, with 203 teachers and 3935 students; 31 private secondary schools, with 117 teachers and 1354 students, 1 public normal school, with 31 teachers and 177 students in normal courses; and 5 private normal schools, with 16 teachers and 99 students in normal courses. 9 colleges and universities for men and for both sexes reported 103 professors and instructors, 1494 students in all departments, and a total income of \$99,222; 2 schools of technology reported 37 professors and instructors, 557 students in all departments, and a total income of \$132,386; and 9 colleges and seminaries for women reported 114 professors and instructors, 1178 students in all departments, and a total income of \$109,469. The professional schools comprised: 3 theological schools, with 15 instructors and 37 students; 1 law school, with 1 instructor and 24 students; and 1 medical school, with 17 instructors and 97 students.

Population.—According to the United States census, the population in 1890 was 1,151,149; in 1900, 1,340,316; increase for the decade, 189,167, or 16.4 per cent. The four largest cities, with population in 1900, are: Charleston, 55,807; Columbia, 21,108; Greenville, 11,860; and Spartanburg, 11,395.

Railroad Legislation.—By an act approved February 19, 1900, it was provided that railway companies whose lines entered or passed through the same town or city, should be required to build connecting tracks for the interchange and delivery of cars and freight. Any railway corporation whose tracks were thus connected with those of another railroad was to be obliged to transfer to that road, upon demand of the consignee or owner of the freight, any car or number of cars, at a price to be fixed by the railroad commission, but which should not in any case exceed \$1 per car. Empty cars, however, were to be retransferred free of charge. In limitation of the sweeping provisions of this law, it was provided that the state railroad commissioners should have power, after a full and fair hearing, to suspend the operation of the act at any junctional point, where they considered that inter-railway connections would be unreasonable and unnecessary.

An act was approved on February 19, 1900, amending an act of 1898, which required railroad companies, other than narrow gauge roads, and those operating less than 40 miles of road, to provide either separate coaches or separate compartments in coaches for white and negro passengers. The law of 1900 took away the "separate compartment" option of the companies to whom the act of 1898 applied, and made it obligatory upon them to provide separate coaches for whites and negroes. The law further provided, that, unless the separate coaches provided for blacks or whites were inadequate for the accommodation of one or the other of them, it should be unlawful for the officers or employees having charge of the train to permit whites and blacks to occupy the same car. And for an infraction of this provision, a fine was to be imposed upon the trainman or passenger, as the case might be. Conductors and employees of trains were given authority to eject from train or car any one who refused to remain in a car to which he was assigned or to remove from a car to which he was not assigned. Another provision of the law was that which relieved railroad companies of the obligation of keeping second-class fares in force and provided that all railroads to which the act of 1898 applied should charge a maximum rate of 3 cents per mile.

Several alterations were made by the Legislature in the dispensary law. From 1893 to 1899, inclusive, the State profited by dispensaries to the extent of \$1,706,000. The profit for the year 1899 was \$414,181.74, of which amount counties, towns, and cities received \$220,492.25, and the State, \$193,689.49. By the amended law the State will hereafter receive a much smaller proportion of the dispensary profits, and the counties and towns a much larger per cent. Other amendments provide for the abolishment of the State Board of Control and create a board of directors. The dispensary commissioner is to be elected by the general assembly for a term of two years. Persons wishing to supply liquors to the State are required under penalty to give the quality, price, and chemical analysis of the liquors they propose to sell.

Elections.—At the State elections of 1900 there was no opposition to the Democratic nominee for governor, M. B. McSweeney, who was elected by 46,457 votes. The secretary of state, treasurer, and all other candidates were elected by about the same vote, with no opposing candidates. All of the seven Democratic representatives to Congress were returned, with the exception of Stanyarne Wilson (Dem.),

in the fourth district, who was replaced by Joseph T. Johnson (Dem.); and James Norton (Dem.), in the sixth district, who was replaced by R. S. Scarborough (Dem.).

The State Legislature in 1900 consisted, in the Senate, of 41 Democrats; and in the House, of 123 Democrats and 1 Republican. In 1901, the Legislature will remain the same. In the national election McKinley received 3580 votes, while 47,236 votes were cast for Bryan. In 1896 McKinley received 9313 votes, and Bryan received 58,798. Thus Bryan's plurality was diminished from 49,517 in 1896 to 43,657 in 1900.

State Officers and National Representatives.—State officers for 1900: Executive—governor, M. B. McSweeney; lieutenant-governor, R. B. Scarborough; secretary of state, M. R. Cooper; treasurer, W. H. Timmerman; comptroller, D. P. Derham; attorney-general, G. D. Billinger; adjutant-general, J. W. Floyd; superintendent of education, J. J. McMahon—all Democrats.

Supreme Court: Chief justice, Henry McIver; justices, E. B. Gary, Ira B. Jones, and Y. J. Pope; clerk, U. R. Brooks—all Democrats.

State officers for 1901: Executive—same as for 1900, except that J. H. Tillman replaces Scarborough as lieutenant-governor; and R. H. Jennings replaces Timmerman as treasurer.

Supreme Court: Same as for 1900.

Congressional representatives for 1900 (56th Congress): William Elliott (Beaufort), W. J. Talbert (Parksville), A. C. Latimer (Belton), Stanyarne Wilson, D. E. Finley (Yorkville), James Norton, J. W. Stokes (Orangeburg)—all Democrats.

Congressional representatives for 1901 (57th Congress): Same as for 1900, except J. T. Johnson (Spartanburg) and R. C. Scarborough (Conway) replace Wilson and Norton.

Senators for 1900 (56th Congress): Benj. R. Tillman (until 1901) and J. L. McLaurin (until 1903)—both Democrats.

Senators for 1901 (57th Congress): J. L. McLaurin (until 1903) from Bennettsville; vacant.

SOUTH DAKOTA, a Northwestern State of the United States, has an area of 77,650 square miles. The capital is Pierre. Dakota was organized as a Territory, March 2, 1861, and was divided into the States of North and South Dakota, November 2, 1889.

Mineralogy.—The estimated production of the precious metals for the calendar year 1900 was: Gold, 320,130 fine ounces, valued at \$6,617,674, and silver, 280,000 fine ounces, valued at \$170,800. South Dakota ranked third among the States in the production of gold. Quarrying in 1899 yielded granite to the value of \$91,049; limestone, \$45,808, and sandstone, \$18,325. The shipments of mica from Custer County have begun to assume very large proportions.

Agriculture.—The following shows the production and value of the principal crops for 1900: Corn, 32,418,819 bushels, \$9,401,458; wheat, 20,149,684 bushels, \$11,686,817; oats, 12,653,266 bushels, \$3,036,784; barley, 1,543,571 bushels, \$478,507; rye, 27,804 bushels, \$10,844; potatoes, 4,030,841 bushels, \$1,451,103, and hay, 2,064,196 tons, \$8,153,574. The number and value of live stock, as assessed for taxation in the year 1900, were as follows: Horses, 351,596, \$7,509,575; mules and asses, 4665, \$104,824; cattle, 955,577, \$15,742,523; swine, 275,734, \$830,400; sheep, 449,876, \$898,643. The *Bulletin* of the National Association of Wool Manufacturers estimated the wool clip for 1900 at 2,422,661 pounds of washed and unwashed wool and 969,064 pounds of scoured wool.

Industries.—In 1899 there were 54 cigar factories, and their combined production for the calendar year was 5,293,850 cigars. The following statement gives comparative statistics of the commercial and business failures in the State for 1898, 1899, and 1900:

Year.	Number of Failures.	Number of Business Concerns.	Percentage of Failures.	Liabilities.
1898.....	20	6,555	0.31	\$74,573
1899.....	11	6,757	0.16	48,748
1900.....	32	6,962	0.46	317,527

It appears from the above that there were 202 more business concerns in the State in 1899 than in 1898, and 205 more in 1900 than in 1899. Although the number of failures in 1900 was considerably in excess of the number in the preceding year, comparison with the records of other States shows that the percentage of failures was materially below the average.

Commerce.—During the fiscal year ending June 30, 1900, the imports of North and South Dakota, which constitute one district in the report of the United States

Treasury Department, aggregated in value \$755,426, and the exports, \$6,442,303. The imports of gold were \$2033, and of silver, \$14,237, making the total foreign trade of the two States \$7,213,999.

Railways.—The new railway construction reported for the calendar year 1900 aggregated 136.66, giving the State a total mileage of about 2950. The total assessed valuation of railroad property in 1900 was \$12,741,397, an increase over the preceding year of 6.78 per cent. Only 2802.86 miles of track were assessed.

Banks.—On October 31, 1900, there were 56 national banks, of which 9 were insolvent, 19 in liquidation, and 28 in operation. The capital stock aggregated \$1,505,000; circulation outstanding, \$661,235; deposits, \$6,204,980, and reserve held, \$2,210,777. The State banks June 30, 1900, numbered 109, and had capital, \$1,245,227; deposits, \$5,322,384, and resources, \$7,142,357; and private banks, 70, with capital, \$945,076; deposits, \$3,329,486, and resources, \$5,008,718. During the year ending September 30, 1900, the exchanges at the clearing house at Sioux Falls aggregated \$7,758,581, an increase of \$987,336 over the preceding year.

Finances.—The total receipts at the State treasury for the fiscal year ending June 30, 1900, were \$1,162,560; total expenditures, \$1,143,969; balance July 1, 1900, \$555,701. The total bonded indebtedness of the State in June, 1900, was \$613,300, of which \$370,800 was in coupon bonds and \$242,500 in registered bonds. The assessed valuations as equalized by the State board for 1900 were: Real estate, \$119,821,418; personal property, \$39,207,012; other property, \$13,226,655; total, \$172,255,085, an increase over 1899 of \$13,924,974, or 8.8 per cent.

Education.—The school census of 1899 shows a total enumeration of 119,579 persons between the ages of 6 and 21. The enrolment in the public schools was 98,540, and the average daily attendance, 69,923. There were 4806 teachers, 3755 buildings used as schoolhouses, and public school property valued at \$2,905,924. The total school revenue was \$1,645,529; and expenditures, \$1,605,623, of which \$941,797 was for teachers' and superintendents' salaries. The average expenditure per pupil for the whole school year was \$22.96. There were 29 public high schools, with 74 teachers and 1871 secondary students; 7 private secondary schools, with 30 teachers and 247 secondary students; 3 public normal schools, with 27 teachers and 568 students in normal courses; and 1 private normal school, with 3 teachers and 58 students in normal courses. Six colleges and universities for men and for both sexes reported 82 professors and instructors, 824 students in all departments, and a total income of \$77,455; and 2 schools of technology reported 29 professors and instructors, 484 students in all departments, and a total income of \$64,033. No professional schools were reported.

Population.—According to the United States census, the population in 1890 was 328,808; in 1900, 401,570; increase for the decade, 72,762, or 22.1 per cent. The largest city is Sioux Falls, with a population in 1900 of 10,266.

Constitutional Amendments.—Two amendments to the constitution were adopted at the elections in November. The section of the constitution was annulled which directed that the State should retain exclusive control of the manufacture and sale of liquors; and counties were authorized "to invest permanent school and endowment funds in bonds of school corporation, State, county, or municipality, or in first mortgages on improved farm lands."

Elections.—At the State elections in 1900 the Republican nominee for governor, Charles N. Herreid, received 53,803 votes, and Lien, the Fusionist nominee, received 40,091 votes. Herreid's plurality was 13,712. The vote for congressmen resulted in the change of one of the two representatives at large. Eben W. Martin (Rep.) was elected to succeed R. J. Gamble (Rep.). In the State Legislature of 1900 there were 28 Republicans and 17 Fusionists in the Senate and 59 Republicans and 28 Fusionists in the House. In the Legislature of 1901 there will be 39 Republicans and 6 Fusionists in the Senate and 78 Republicans and 9 Fusionists in the House. In the national election McKinley had 54,530 votes, and Bryan had 39,554 votes. In 1896 McKinley had 41,042, and Bryan had 41,225. Thus, in 1896 Bryan had a plurality of 183, and in 1900 McKinley had a plurality of 14,986.

State Officers and National Representatives.—State officers for 1900: Executive—governor, A. E. Lee (Fus.); lieutenant-governor, J. T. Kean (Rep.); secretary of state, W. H. Roddle (Rep.); treasurer, John Schamber (Rep.); auditor, Jas. D. Reeves (Rep.); attorney-general, J. L. Pyle (Rep.); superintendent of education, E. E. Collins (Rep.).

Supreme Court: Chief justice, Dighton Corson; associate justices, Dick Haney and H. G. Fuller; clerk, Miss Jessie Fuller—all Republicans.

State officers for 1901: Executive—governor, C. N. Herreid; lieutenant-governor, George W. Snow; secretary of state, O. C. Berg; treasurer, John Schamber; auditor, J. D. Reeves; attorney-general, J. L. Pyle; superintendent of public instruction, E. E. Collins; commissioner of school and public lands, David Eastman.

Supreme Court: Same as for 1900.

Congressional representatives for 1900 (56th Congress): Charles H. Burke (Pierre) and Robert J. Gamble (Yankton)—both Republicans.

Congressional representatives for 1901 (57th Congress): E. W. Martin (Deadwood) and Charles H. Burke (Pierre)—both Republicans.

Senators for 1900 (56th Congress): R. F. Pettigrew (until 1901) and J. H. Kyle (until 1903)—both Independent.

Senators for 1901 (57th Congress): James H. Kyle (until 1903), from Aberdeen (Ind.); one vacancy.

SOUTH, UNIVERSITY OF THE, a prominent Protestant Episcopal institution at Sewanee, Tenn., established in 1868. The university, which in 1899-1900 had 62 instructors and 518 students, embraces, besides the undergraduate college, departments of theology, law, medicine, and pharmacy, and a preparatory school. Its library contains 43,516 volumes. The amount of productive funds is placed at \$185,581; the income for the last academic year was \$51,375, in addition to \$60,700, the sum received by gifts.

SPAIN, a kingdom of southwestern Europe, occupying the greater part of the Iberian peninsula, has an area of 197,670 square miles, including Ceuta on the coast of Africa, and a population, according to the census of 1887, of 17,565,632. In 1900 the population was estimated at 18,800,000. The largest cities are the capital, Madrid, with a population in 1887 of 470,283; Barcelona, 272,481; Valencia, 170,763; Seville, 143,182; Malaga, 134,016. Seventeen other towns have over 30,000 inhabitants. Emigration to Brazil, Argentina, and Uruguay is extensive. The Roman Catholic Church is the national church of Spain, the total number of dissidents, Protestants, Jews, and pagans, being only about 30,000. The system of public instruction is quite inefficient owing to the poverty of the municipalities, the wretched condition of the national finances, and the attitude of the clergy, who have shown themselves hostile to compulsory secular education. In 1899, 68.1 per cent. of the population could neither read nor write. In 1885 there were 24,529 public and 5576 private primary schools, with an attendance of about 1,800,000. Secondary education is insufficiently provided for; of universities there are 10, with about 17,000 students. The most important are Madrid, with 5575 students in 1897-98; Barcelona, 1887; Valencia, 1728; Salamanca, 1200; Oviedo, 264.

Production, Industry, and Commerce.—The chief agricultural products are wheat, barley, rye, oats and maize, flax and hemp, olives, fruit, and products of the vine. The country is exceptionally rich in minerals, containing iron, coal, copper, silver, quicksilver, zinc, and sulphur, and the yield of minerals is annually increasing. In 1898 nearly 11,000,000 tons of ore were mined, of which coal comprised 1,900,000 tons; copper, 1,388,000 tons, and iron, 7,256,000 tons. Catalonia is the chief manufacturing region of Spain, and Barcelona, the capital of the province, is the great centre of the textile and paper industries. The foreign commerce of Spain for 1899 was greatly stimulated by the cessation of war. The imports for that year amounted to 936,536,385 pesetas (pes. = 19.3 cents), and the exports to 724,878,757 pesetas. The chief articles of import in their order of importance were foodstuffs and sugar, raw cotton and cotton manufactures, minerals and glassware, chemical products, animals, timber, machinery, metals, and manufactures of silk, paper, and wool. The principal commodities exported were grain, sugar, wine, minerals, metals, animals, and timber. During the fiscal year ending June 30, 1900, the United States sent to Spain cotton, foodstuffs, wood manufactures, and mineral oil to the value of \$13,309,680, and brought back \$5,950,047 worth of wine, iron ore and fruits. The new tariff that went into effect on January 1, 1900, discriminates, in many instances, against American commodities in favor of France and Russia. This applies to American sewing machines, typewriters, and scientific instruments, and especially to mineral oils, the trade in which is sure to be destroyed by the prohibitive duties. The war with the United States, by plunging Spain into great financial difficulties and revealing the country's weakness, gave an immense impetus to reform and has led to development in the industrial life of the nation. The movement is especially powerful in Commerce. To replace the markets lost with the colonies Spanish merchants have turned to South America. The merchant navy of Spain in 1898 comprised 436 steamers and 1145 sailing vessels, with a tonnage of 506,455. The railway systems on January 1, 1899, comprised, according to the United States consular reports, 8668 miles of line, the rolling stock consisting of 1835 locomotives and 40,197 cars. Subsidies amounting to \$64,000,000 have been granted by the government to the railway companies.

Army and Navy.—The army is raised by conscription, all Spaniards over 19 being liable to service, which comprises 3 years with the colors, 3 years with the first reserve, 6 years with the second reserve. The peace footing is 98,000 men and over 7000 officers; the war footing is 184,000 men; the total armed strength is 480,000 men. The war with the United States left Spain with 1 battleship, 3 armored

cruisers and 1 protected cruiser, 9 second and third-class cruisers, 60 gunboats, and 27 torpedo boats. The cruisers *Isabel la Católica* and *Reina Regente* are now building. The cruiser *Cataluña* of 7000 tons was launched in September, 1900. The Silvela ministry, pledged to a policy of economy, restricted the expenditures on the army and navy. The Azcarraga ministry, now in power, favors the strengthening of the land and naval forces, but the whole spirit of the nation, and the condition of the finances, speak against any elaborate military and naval programme. Exceptions are the Balearic and Canary Islands, which have been fortified at great expense against possible encroachment on the part of England.

Finance.—The budget estimates for 1899-1900, as presented to the *Cortes*, showed an income of 937,930,145 pesetas and an expenditure of 937,178,134 pesetas, but as the opposition prevented a vote on the estimates, the budget of 1898-99 was continued in force, with an income of 847,816,890 pesetas and an expenditure of 873,382,439 pesetas. The estimated revenue for the year 1900-01 was 982,851,546 pesetas, and the expenditure, 947,544,479 pesetas. Revenue is derived from direct taxation (land, trade, mines, registration), indirect taxation (customs and excise), the national property, the tobacco monopoly, the state lottery, and the mint. The chief items of expenditure are the interest on the public debt (which requires half of the total revenue), the army and the navy. Economy in administration and radical fiscal reforms were demanded during 1900 by the powerful National Union party. The national debt on July 1, 1899, amounted to 8,953,339,837 pesetas.

Government.—Spain is a constitutional monarchy, with the executive power resting in the king and the legislative power in the king and *Cortes*. The *Cortes* is composed of the senate, with 360 members, and the congress, with 431 deputies. The houses are equal in power. The ministry in office at the end of 1900 was constituted as follows: Premier, Azcarraga; foreign affairs, Aguilar del Campo; finance, Salazar; interior, Ugarte; public instruction, Alix; public works and agriculture, Toca; justice, Marquis Vadillo; war, Linares; navy, Mozo.

HISTORY.

The year 1900 in Spain was marked by profound movements in every phase of the national life. Politics, commerce, industry, the army and the navy, the monarchy itself, were affected by the new conditions following the war with the United States. That disaster served Spain well in one respect. By utterly demoralizing the finances of the state and making the burden of taxation intolerable, it brought about a universal demand for fiscal and administrative reform on the one hand, and an earnest endeavor to improve the economic condition of the country on the other. The struggle between this movement, essentially liberal in character, and the reactionary tendencies of the parties in power, appeared in many ways during the year.

The Cabinet.—The Silvela ministry had come in after the war, pledged to reform in the finances and the general administration. Economy was the chief object in view. Over 90 per cent. of the revenue was being spent on the army, the navy, and in interest on the public debt; less than 10 per cent. was being devoted to education and public works. Silvela brought about a reduction in the military and naval appropriations, though public opinion forced him into the expense of fortifying the Balearic and Canary Islands, and the port of Galicia. On January 20, 1900, the minister of finance submitted to the chamber a bill for the conversion of the Cuban and Philippine debts into perpetual national stock. This measure concluded the ministry's financial programme, and the question of general reform was next to be taken up. Before doing so the premier reconstructed his cabinet (April 19), which was Conservative, by admitting a Liberal, Gasset, as minister of public works, commerce and industry, a new department hitherto included with instruction and fine arts under the name *Fomento*. But it turned out that the Silvela cabinet was insincere in its pretensions at reform, and especially the National Union movement and the Separatist agitation drove it to reaction. It showed itself inclined to give the clergy large powers in the educational system, it proposed a revision of the civil and criminal codes, tending to subordinate the judiciary to the government; it struck at once at the liberty of the press and the jury system by formulating laws to the effect that all press offences involving the army and the navy should be tried before courts-martial. On September 22 Martínez Campos died, and Linares, minister of war, appointed General Weyler to succeed him as captain-general of Madrid. The act was plainly a move in the plan of making the army independent of the government, and was followed by the resignation of the ministers of the interior and agriculture. On October 21 Silvela himself, with the rest of the cabinet, resigned, glad of an opportunity to escape the responsibilities which his promises of reform had laid upon him. The ministry was reconstituted as given above under the paragraph *Government*. Virtually it stood for a combination of Silvela's reactionary policy, and its composition indicated the near abandonment of economy in regard to the army and the navy, and the resurrection of militarism.

The National Union Movement.—The refusal of Catalonia to pay imposts, late in 1899, led to the formation of a committee of National Union, which assumed the direction of the widespread movement for reform. The greatest activity was displayed by the merchants of the northeastern part of the country, but the economic feature was not the only one. To some degree all the liberal elements in Spain sympathized with the National Union party, for its demands included the entire reorganization of the vital forces of the nation: fiscal and administrative reform, the amelioration of the judicial system, the introduction of an effective system of compulsory education, the improvement of the provincial governments. In view of the excessive burden of taxation and the government's policy of expenditure the National Committee advised property holders to refuse to pay taxes. On January 14, 1900, 400 delegates, representing 50 chambers of commerce, 39 agricultural societies, and 37 mercantile and industrial associations, met at Valladolid and adopted the programme outlined above. The fiercest opposition to the Nationalists came from the upper classes and the clergy, who would wish to see the army aggrandized and secular education neglected. The government vigorously prosecuted the leaders of the National Union party and all who refused to pay taxes. In May riots broke out in Seville, Valencia, Polencia, and Barcelona. Martial law was declared in the provinces of Valencia and Barcelona, and on June 21 in Madrid. The constitutional guarantees were suspended in many other provinces, and at the end of the year had not been restored.

Separatism.—In Catalonia the spirit of opposition to the central government came near to revolution. The province of Barcelona especially, the richest and most populous in Spain, objected to being taxed for the support of an excessively large army while industry and commerce received little attention from the government. Other provinces expressed their dissatisfaction with a system of taxation that drained the outlying regions for the benefit of Madrid and the bureaucracy there. Though no mention was made by the province of actual secession, strong demands were put forth for larger local power.

Proposals were made to the cabinet that fiscal contracts should be made with certain provinces, according to which they were to contribute an annual quota without being subject to the taxing powers of the *Cortes*. In case of extraordinary need, special contributions were to be agreed upon by contract. The Silvela cabinet promptly rejected this measure, causing violent feeling in the disaffected provinces. Though the separatist movement was not at all coincident with the National Union agitation, they nevertheless worked as allies in many parts of the country, since they agreed in many economic and political features, and equally enjoyed the hatred and persecution of the government.

Carlism.—Late in October and in November a number of uprisings in Catalonia and the province of Alicante were taken by the government as the beginnings of the Carlist movement. A band of armed men attacked the barracks of the civil guard at Badalona, near Barcelona, and other bands appeared in the neighborhood of the city. Telegraph wires were cut in many places, and the government was badly frightened. In an interview published in the *Gazzetta di Venezia*, Don Carlos emphatically denied all participation in the disturbances, and declared that if the insurgents were Carlists they had risen without his permission, and were doing his cause more harm than good. The authorities, nevertheless, made a great anti-*Carlist* demonstration, arrested a number of bishops and members of the lower clergy, suppressed *Carlist* journals, closed many clubs, and one Catholic seminary. The band of partisans in Alicante was defeated and dispersed.

The Bourbon Marriage.—On December 18 the queen regent informed the chamber of the proposed marriage of her daughter, the Princess of Asturias, to Charles de Bourbon, Count of Caserta, son of the claimant to the throne of Naples. The match was a love affair, and had, its supporters said, no political significance. But the Liberals in the *Cortes* opposed the plan vehemently, and refused to take part in the reply to the queen's letter. The marriage was approved by the *Cortes*, but caused the greatest apprehensions throughout the country. The father of the groom, it was said, was a friend of Don Carlos, and a firm believer in the Bourbon ideals of monarchy. The Princess of Asturias, the heiress to the throne, would therefore come under the influence of the partisans of absolutism and clerical domination. Considering the disorganized state of the country, the disaffection of the army, the hostility of the provinces, it did not seem at all improbable that the constitution might be overthrown and a despotic monarchy established.

A convention was signed in Washington on November 7, 1900, by which Spain ceded the islands of Cagayan and Sibutu, her only remaining possessions in the Pacific, to the United States, receiving \$100,000 for them. It appeared that these islands, which belong to the Philippine group, had been overlooked by the commissioners who drafted the treaty of Paris in 1898. See *COLONIES*.

SPANISH LITERATURE. History and Biography.—The consequences of the Spanish-American War, the causes of Spain's decline, have occupied the attention of many of the most thoughtful Spanish writers during the past year. A noteworthy volume is *The Moral of the Defeat*, by Señor Morote, a journalist, formerly on the staff of *El Liberal*, who was an eyewitness of a large part of the Cuban campaign. The book is important, not only for accuracy and impartiality, but especially for the indications which the author points out of a coming regeneration in Spain. Another work which has won favor is *The National Problem*, by Macias Picavea. It is a study of the Spanish people and the history of their development, physical and moral; and among the causes of their present decline he assigns first place to defects in their educational system. *Reconstitution and Europeanization of Spain* is a summary of the labors of a national league formed in the autumn of 1898 for the purpose of drawing up a programme of political and social reform. The appendix includes historical essays; one upon Isabella I., from which lessons are drawn in support of the proposed reforms. In this connection should also be cited two short addresses—*Spain of Yesterday and of To-day*, by the novelist and critic Emilia Pardo Bazán, and *What Constitutes the Strength of Nations?* by José Echegaray. Among works of a more distinctly historical nature is Señor F. Codera's scholarly account of the *Decadence and Disappearance of the Almoravids in Spain*. *The Annexation of the Kingdom of Navarre in the Time of Ferdinand the Catholic*, by Señor Ruano, is a monograph dealing with the seizure of the kingdom and its formal union with Castille. Fernandez Duro's comprehensive *History of the Spanish Navy* has reached its fifth volume, which covers the latter half of the seventeenth century. Señor Gomez de Arceche y Moro's exhaustive *War of Independence*, a "military history of Spain from 1808 to 1814," has reached its eleventh volume. Another volume relating to this same war is a collection of unpublished documents formerly belonging to General Castanos, now issued by the *Revista Critica de Historia y Literatura* in its newly founded library of unpublished documents. One or two volumes of local history deserve brief mention—the second part of L. López Ferreiro's *History of the Church of Santiago* and D. Pablo de Gorosábel's monograph on "Memorable Matters" connected with the Basque province of Guipuzcoa. Finally, Señor Uña, a new writer of some promise, contributes a *résumé* of the history of Spanish associations of artisans, *Las Asociaciones Obreras en España*.

South American history is not neglected. Señor Garcia Merou has published a *History of the Argentine Republic*; J. Perez Garcia has presented the *Natural, Military, Civil, and Sacred History of the Kingdom of Chile*. The collection of unpublished documents relating to the history of Chile, which is being issued under the supervision of Señor J. T. Medina, has reached its twentieth and twenty-first volumes, and there are also two new volumes in the series of *Historians of Chile and Documents Relating to National History*.

A curious and interesting biography is Señor Porreño's *Life of Don Juan of Austria*, the hero of Lepanto. Señor D. A. Danvila contributes a sketch of *Don Cristobal de Moura, First Marquis of Castel-Rodrigo* (1538-1613), which throws some light upon the complicated history of diplomacy in the sixteenth century. *The Life and Works of Diego Velasquez*, by Señor Picón, was one of the numerous works called forth by the recent celebration of the great Spanish artist's centenary.

Literary History and Criticism.—In commemoration of the twentieth year of the professorship of Professor Menéndez y Pelayo a volume containing fifty-seven essays was published during the year 1900. These essays range from social and political history to science and literature, and the names of the contributors include many of the leading scholars in Spain, as well as a number of foreign writers of distinction. A posthumous volume appeared during the year which completes the exhaustive bibliography of Cervantes's writings, by the late D. Leopoldo Rius y Llosells, of which the first part was published in 1895. The ninth instalment is now ready of Señor Menéndez y Pelayo's *Anthology of Lyric Poets*, one of the most valuable fruits of the industry and learning of Spain's leading critic. Emilio Cotarelo, who with Menéndez Pidal and Rafael Altamira stands at the head of the younger generation of critics, contributes a notable study of the life and writings of that delightfully exuberant and thoroughly picaresque eighteenth-century dramatist, Don Ramon de la Cruz. Passing mention should be made of an essay upon the Duke de Rivas's romantic play, *Don Alvaro*. A still more notable contribution to the study of Spanish drama is *Notes upon the Annals of the Theatre in Seville from Lope de Rueda to the Close of the Eighteenth Century*, by Sanchez Arjona. The Marquez de Valmar, whose name is especially associated with eighteenth-century literature, this year publishes a volume of *Historical and Literary Studies*, some of which go back to a much earlier epoch, notably an interesting study of the *Cancionero de Baena*. Still another scholarly volume is Señor Jordán de Urries's *Life and Study of Jauregui*, the seventeenth-century poet, who will probably be remembered as long for his remarkable translation of Tasso's *Aminta* as for any original work.

Poetry and Fiction.—There is little of the first order to be mentioned in poetry. Señor Aquino publishes a volume of *Sensations*, Señor Medina confirms the promise of his earlier poems with a collection of graceful *Aires Murcianos*, and there is considerable promise in Doria's *De Sol a Sol*, Costa's *Lyrics*, and Marquina's *Odes*. Señor Gual, who writes in Catalan, as do several of Spain's most promising poets, has published his latest volume, entitled *Llibre d'Horas*.

Fiction.—In fiction also there is little of lasting value. Señor Valera's *Morsamor* belongs rather to the closing weeks of the previous year, but it easily takes precedence over the novels which belong by rights to the fiction of 1900. It is a brilliant fantasy of shifting scene and changing color, a sort of modern *Arabian Nights*, yet with an undercurrent of deep philosophy, such as is to be expected from the author of *Pepita Jimenez*. The third series of *Episodios Nacionales*, by Pérez Galdós, has reached its completion, and continues to provoke wonder at the author's unflagging powers of imagination. The latest volumes are *La Estafeta Romantica*, interesting chiefly as a subtle character study; *Vergara*, which involves a description of the Carlist War; *Montes de Oca*; *Los Ayacuchos* and *Bodas Reales*.

The complete edition of Emilia Pardo Bazán's writings is still in progress. Her latest contribution to fiction is a collection of short stories, *Un Destripador de Atlano*. Two of the most promising novelists of the younger generation are Vicente Blasco Ibañez and Juan Ochoa, best known as author of *Un Alma de Dios*. The former's latest success is a study of social life in Valencia, called *La Barraca*. Ochoa gives us a collection of short stories, *Los Senores de Hermida*, and from the Marquis de Figueroa we have *Gondar y Forteza*.

SPECIES. See ENTOMOLOGY (paragraph Systematic Works).

SPORTS. The various articles on sports in the YEAR BOOK are devoted mostly to a record of amateur pastimes in the United States. The thirty odd branches of present sports and pastimes discussed will be found under the following heads: ATHLETICS; TRACK AND FIELD; BASEBALL; BOWLING; BOXING; CANOEING; COURT-TENNIS; CRICKET; CROQUET (ROQUE); CURLING; CYCLING; FENCING; FOOTBALL; GOLF; ICE-HOCKEY; ICE-YACHTING; LACROSSE; LAWN-TENNIS; POLO; ROWING; RACQUETS; SHOOTING; SKATING; SWIMMING, and WATER-POLO; YACHTING; see also articles on BILLIARDS; CHESS, and POOL.

SPORTS, INTERNATIONAL. The most important international sporting events of 1900 were the Paris track games, the English athletic championships, and the contest for the Davis Lawn-tennis Bowl, in all of which the Americans were victorious. Two cable chess matches were held with Great Britain and a cable revolver match with France. A Haverford College cricket eleven played a successful series of games in England, and an American polo team played an impromptu game for the "American Cup" at Hurlingham. A remarkable series of matches at racquets and lawn-tennis was played at Tuxedo, N. Y., and elsewhere among the leading amateurs and professional players of the world. The Vesper Boat Club won the 8-oared race at the Paris Exposition, where nearly all branches of sport were represented during the summer. Among the usual American-Canadian contests, the United States won at cricket, golf, lawn-tennis, and curling, and a representative of this country won the Canadian racquet championship. Some interesting matches were arranged at ice-hockey and lacrosse. In yachting the United States won the interlake trophy and Canada the Seawanhaka Cup. Sir Thomas Lipton challenged for a race for the America's Cup in 1901, and two yachts are being built in this country to defend the trophy. In 1901 also a University of Pennsylvania crew will contest for the Grand Challenge Cup at Henley, and Oxford and Cambridge will meet Yale and Harvard in an athletic contest at New York. See the various sports, a list of which is given in the preceding article.

STANFORD UNIVERSITY. See LELAND STANFORD, JR., UNIVERSITY and UNIVERSITIES AND COLLEGES.

STEEL. See IRON AND STEEL.

STEEVENS, GEORGE WARRINGTON, a newspaper correspondent, died of enteric fever at Ladysmith, Natal, then besieged by the Boers, on January 15, 1900. Born December 10, 1869, he was educated at the City of London School and at Balliol College, Oxford. At the university he was distinguished for his classical scholarship, and in 1893 was elected a fellow of Pembroke College, Oxford. After assisting Mr. W. E. Henley in the editorship of the *National Observer*, he occupied a similar position with Mr. H. J. C. Cust, late editor of the *Pall Mall Gazette*, from 1893 to 1896. In the latter year he transferred his services to the *London Daily Mail*, and was sent to the United States to describe the country as it appeared in the year of a presidential election. The result was a series of letters forceful and pictorial and of such merit that they were widely copied. In the following year

the series was issued in book form, entitled *The Land of the Dollar*. Steevens had already written two other books, both published in 1896, *Naval Policy and Monologues of the Dead*. In 1897 appeared his *With the Conquering Turk*, a description of his experiences in the Græco-Turkish War. After journeying to Egypt he published *Egypt in 1898*, and then accompanied the British army to the Soudan, the result being *With Kitchener to Khartoum*, a work that had an extraordinary success. In 1899, as special correspondent of the *Daily Mail*, he went to India, and to the re-trial of Dreyfus, at Rennes; his articles were reprinted in book form and appeared as *In India* and *The Tragedy of Dreyfus*. In the fall of the year he went to South Africa, and began a new series of letters, which he intended to publish later as a volume, entitled *From Capetown to Pretoria*; in the spring of 1900 this book appeared as *From Capetown to Ladysmith*. At the time of his death he also had begun a novel to be entitled *John King*.

STELLAR PARALLAX. See ASTRONOMICAL PROGRESS.

STEWART, Sir DONALD MARTIN, G.C.B., G.C.S.I., C.I.E., field marshal in the British army, died in Algiers, March 26, 1900. Born near Forres, Elginshire, March 21, 1824, he entered Aberdeen University in 1839, but in 1840 accepted an appointment to the Indian army. He saw service on the Afghan frontier, and at the outbreak of the Sepoy rebellion in 1857 escaped to Agra, where he was appointed commandant of the volunteer cavalry. As assistant adjutant-general to the Bengal army he served at the capture of Lucknow and in the Rohilkhand campaign. For distinguished merit he received a medal with two clasps, and was promoted to be lieutenant-colonel, and during the next five years he was occupied with a thorough reorganization of the army. In 1867-68, with rank of brigadier-general, he commanded the Bengal forces in Abyssinia, in 1868-69 commanded the Peshawur division, and in 1871 was appointed chief commissioner of the Andaman and Nicobar islands. In the Afghan War he commanded the Kandahar division, making in 1880 his memorable march from Kandahar to Kabul. From 1881 to 1885 he was commander-in-chief in India, and from 1885 to 1895 was a member of the Indian Council. As commander-in-chief he initiated the policy, adhered to by Lord Roberts, his successor, of establishing across the northwestern frontier a strategic series of military posts. He was in 1894 promoted to be field-marshal, and from 1895 until his death was governor of Chelsea Hospital.

STILLÉ, Dr. ALFRED, professor emeritus of the theory and practice of medicine and of clinical medicine in the University of Pennsylvania, died at Philadelphia, September 24, 1900, at the age of 81. He received the bachelor's degree from that university in 1832, and the medical degree three years later. After further studies abroad, he acted as house-surgeon to the Philadelphia Hospital, and later to the Pennsylvania Hospital. Appointed professor of the theory and practice of medicine in the Pennsylvania Medical College in 1854, he assumed the same chair in the University of Pennsylvania in 1864, and was made professor emeritus in 1884. He was at different times president of the American Medical Association and of the College of Physicians of Philadelphia. Among his numerous contributions to medical literature are his *Treatise on Therapeutics and Materia Medica* (1860), and the *National Dispensatory*, written in conjunction with Professor John M. Maisch, and published in 1879.

STORRS, RICHARD SALTER, one of the most eminent representatives in this century of traditional Protestantism in America, was born at Braintree, Mass., August 21, 1821, and died in Brooklyn, June 5, 1900. Dr. Storrs exhibited the cumulative effect of several generations of classical and religious training. He received his preliminary education at Monson, Mass., and was graduated from Amherst College in 1839. After teaching school for a time and studying law, he entered the Andover Theological Seminary, receiving his degree in 1845. A year later he was called to the Church of the Pilgrims in Brooklyn, and for fifty-three years remained its pastor. Dr. Storrs was keenly and sympathetically interested in the many charitable, literary, and educational institutions which were developed in Brooklyn in the course of his long residence in that city. During the tumultuous days preceding the Civil War, Dr. Storrs was identified with the party of Chase, Sumner, and Lincoln, which insisted upon the gradual abolishment of slavery through and by means of the Constitution or of legal amendments thereto. A certain quality of staidness which Dr. Storrs possessed enabled him the better to withstand the "new theology" and the "higher criticism" without embittering their advocates. For himself he accepted the authority of the Scriptures as final, believed sin to be wilful and inexcusable, and looked forward to a "final, if not scenic, day of judgment." But for all that, when in 1887 he was elected president of the American Board of Commissioners for Foreign Missions it was alone his conciliatory and harmonizing tact which brought to an end the war of the factions and united both radical and conservative. Outside of his church, where he was beloved as few other ministers have been, Dr. Storrs was

mainly known for his addresses upon special occasions and for his published works. Among the latter are: *The Constitution of the Human Soul* (1856); *Oration on Abraham Lincoln* (1865); *Conditions of Success in Preaching without Notes* (1875); *Declaration of Independence and the Effects of It* (1876); *Manliness in the Scholar* (1883); *Forty Years of Pastoral Life* (1886); *Bernard of Clairvaux: The Times, the Man, and His Work* (1892). Dr. Storrs was one of the founders of the *Independent*, and was park commissioner in 1889. He received the degree of D.D. from Union College in 1853 and from Harvard in 1859, that of LL.D. from Princeton in 1874, and that of L.H.D. from Columbia in 1887.

STRAITS SETTLEMENTS, a British crown colony in the southern part of Malay Peninsula. It includes the provinces of Malacca and Wellesley on the mainland and the adjacent islands of Penang, Singapore, Dindings, the Keeling group and Christmas. The total area of the colony is estimated at 1542 square miles and the population, according to local estimates in 1899, was 604,916. Besides the above enumerated islands and provinces, which constitute an integral part of the colony, there are the Malay Federated States, a territory of over 26,000 square miles with a population of about half a million, which are under the supervision of the governor of the Straits Settlements. Commercially, the colony is considered one of the most valuable possessions of Great Britain. The capital, Singapore, situated at the southern end of the peninsula, has a population of 185,000 and its port is regarded as one of the most important shipping centres in the world. The commerce is mostly transit, the products of the colony itself being comparatively insignificant. The principal native products are gambier, tapioca, and coffee. The aggregate value of the imports and exports of merchandise during 1899 amounted to \$462,136,000 against \$398,052,000 in 1898. The imports for 1899 increased from \$213,000,000 to \$246,250,000. The exports for the same year amounted to \$216,000,000 against \$185,000,000 in the preceding year. The greatest increase in the exports is shown in the case of tapioca, which was exported in 1899 to the value of \$5,937,120 against \$3,480,680 in 1898. The imports of opium also show an increase of about \$2,000,000 over the preceding year. The principal articles of import are rice, cotton-piece goods, opium, fish, tobacco, and petroleum. The exports consist mainly of tin, tapioca, spices, gambier, and copra. About 45 per cent. of the trade of the colony is with Great Britain and the British colonies. The revenue of the colony is derived from stamp tax, licenses, and land tax. The total revenue and expenditures for 1899 amounted to \$5,199,150 and \$4,587,366 respectively. There is no public debt in the colony, and the excess of assets over liabilities in 1899 was over \$2,000,000. The colony is so far without any railways, but the construction of a line connecting the town of Singapore with the mainland was authorized in 1900. The government owns and controls the telegraph lines of Penang, Wellesley, and Malacca, a total of 121 miles. The cable lines between the settlements belong to the Eastern Extension Telegraph Company. The telephone lines belong to the government, but are mostly under the control of private companies. Education in the colony is advancing very slowly. The schools are mostly either entirely maintained or subsidized by the government. There are practically no laws for the regulation of instruction. The educational institutions of the colony consisted in 1899 of 31 schools entirely devoted to the teaching of English; 10 for Tamil and English; 2 for Chinese; and 168 where instruction is carried on entirely in Malay. The total number of pupils in 1899 was estimated at over 15,000. The government spent for the purposes of education during the year \$122,000. The colony is administered by a governor assisted by an executive and a legislative council, the latter consisting of 9 official and 7 unofficial members, two of which are nominated by the chambers of commerce of Singapore and Penang with the approval of the crown. The Federated Malay States are administered by separate residents, who are, however, under the supervision of the governor of the Straits Settlements, who is also high commissioner for the Federated Malay States. See COLONIES.

STREET CLEANING. Of the 129 cities in the United States having, according to the twelfth census, over 30,000 inhabitants, 16 have their streets swept by hand, 9 by machines, and the remainder employ both methods. In 6 cases this work is done entirely by contract, and in 9 cases only in part. The figures on which these statements are based were taken from *Bulletin* of the United States Department of Labor, for September, 1900.

STREETS. See PAVEMENTS and STREET CLEANING.

STRIKES AND LOCKOUTS. *United States.*—A time of industrial prosperity and general commercial revival usually coincides with an aggressive strike movement on the part of workmen for increased pay and reduction of the hours of labor. The year 1900 proved no exception to the rule. The building trades were especially disturbed by strikes almost throughout the country, and in most of the



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STREET CLEANING IN NEW YORK.—1. A group of "White Wings" at the starting point of the annual parade. 2. A sweeper at work with broom, shovel, brush, watering can, and bag carrier. 3. The cart used in New York for the removal of paper and light refuse.

cases the strikers succeeded. The street railway employees were unusually restless, and in more than one city succeeded in gaining recognition, although they still remain among the most poorly organized workingmen in the country. The metal trades, which were among the industries most favorably affected by general prosperity, were also disturbed by strikes, especially in the West, where more than three thousand machinists in Chicago and nearly two thousand in Cleveland, O., threatened the industry with a general strike. The danger was finally averted by the consent of the employers to submit the questions at issue to arbitration. The four most important strikes in 1900 which attracted national attention were the anthracite coal miners' strike in Pennsylvania, the Chicago building trades' strike, the Croton Dam strike in New York State, and the St. Louis street railway strike, which will be found described in the articles on the respective States in which they occurred.

The figures given in the following account of strikes in foreign countries are largely taken from the *Labor Gazette* and the official publications of the trade-unions involved.

Austria-Hungary.—From the preliminary figures available for 1899 it appears that the number of disputes in that year reached 324, involving more than 60,000 workmen. Of the results known for 294 strikes, 69 were in favor of the men, 105 in favor of the employers, and 120 were compromises. From the preliminary results published in the official organ of the Austrian trade-unions for 1900 it appears that there were 300 strikes, affecting about 1000 establishments, employing nearly 150,000 persons, the number of those who went on strike being nearly 110,000. About three-fourths of all the strikers were miners, the wood workers and textile workers furnishing the next highest quota of strikers. Twenty-three per cent. of all the strikes were successful, 28 per cent. resulted in victory for the employers, 31 per cent. were compromised, and as to the rest no information is so far available. Of the individual strikes which took place in 1900, the most important one was that of the coal miners. See AUSTRIA-HUNGARY.

Belgium.—Among the most important strikes in Belgium during 1900 were those in the glass trade, among the coal miners, cotton weavers, dock laborers, nail makers, rope makers, textile workers, and wood workers. The strike in the glass trade involved 8000 workers, and was due to the refusal on the part of the employers to recognize the union and employ only union men. It began with a lockout in July, and at the close of the year was still in progress, both sides refusing to yield. The cotton weavers of all the principal factories in Ghent, 4500 in number, struck for a 20-per-cent. increase of wages, a working day of 10 hours, and a uniform wage schedule. The strike was lost after 4 weeks, and the men returned to work on the old conditions. Returns for 10 months of the year show a total of 120 strikes, involving some 53,000 persons.

France.—According to the fragmentary information available, there were 784 strikes, affecting nearly 200,000 persons in the 10 months from February to December, 1900. In 1899 there were 739 strikes, involving 176,772 people, with a total loss of 3,550,734 working days. Four hundred and sixty-seven of these strikes were on account of wages, and involved 139,561 persons, with a loss of 3,277,391 working days, or practically the bulk of the total loss of time occasioned by strikes. Nearly 12 per cent. of all the strikes in 1899 resulted in favor of the workmen, as compared with nearly 13 per cent. in 1898; about 17½ per cent., as against 47½ per cent. in 1898, resulted in a victory for the employers; 70½ per cent. were compromised in 1899, as against 40 per cent. in 1898. The above strikes included also 5 lockouts.

Denmark.—The latest statistics of strikes available are for 1899. Although the number of disputes during that year was less than in 1898, the great lockout of 1899 was responsible for the large increase in the number of men affected and days of labor lost, as may be seen from the following figures:

	1898.	1899.
Total number of disputes.....	147	98
Number of disputes for which information is available as to the number of work-people involved.....	121	86
Number of persons involved in the last-mentioned disputes.....	6,787	36,096
Number of disputes the duration of which was known.....	107	58
Total number of working days lost in the last-mentioned disputes	92,433	2,828,447

The principal causes of disputes in the two years were as follows:

	1898.	1899.
Wages	114	65
Hours of labor.....	3	1
Conditions of work, rules, etc.....	10	9
Personal relations.....	6	8
Trade unionism.....	3	3
Other causes or causes unknown.....	11	12

Thus, as always and everywhere, the majority of disputes was due to disagreements as to wages.

Germany.—The report of the imperial statistical office on strikes and lockouts in the German Empire in 1899 gives the total number of disputes terminated in 1899 as 1311, of which 1288 were strikes and 23 lockouts, affecting 116,486 persons. In the following industries the strikes involved more than 10,000 persons: Building trades, 47,461; mining and smelting, 10,469; metal working, 10,109; clothing and cleaning, 13,214; 1214, or nearly 93 per cent. of all the disputes, were due to demands for an increase or resistance against decrease of wages. The other disputes were due to demands for reduction of hours of labor, employment of particular persons, and other causes. Twenty-six per cent. of all the disputes resulted in a victory for the working people, 40 per cent. in a victory for the employers, and in 33 per cent. a compromise was effected. From preliminary reports published during 1900 it appears that 514 strikes occurred in 10 months of that year.

Great Britain.—There were 623 disputes in Great Britain in 1900, involving directly 136,256 persons and indirectly 48,517, the total number of working days lost being 3,784,985. There were no great disputes, either as to the length of time or the number of persons involved. The largest number of disputes occurred in the building trades; the largest number of men involved was in transportation, and the largest number of days lost on account of strikes was in the mining and quarrying industry. The first of the tables following shows the distribution of strikes by various trades, and the second shows the number of strikes, etc., for the last eight years. As will be seen from that table, the year 1900 shows the smallest number of strikes since 1893.

LABOR DISPUTES FOR 1900, CLASSIFIED BY TRADES.

GROUPS OF TRADES.	Number of disputes.	NUMBER OF PEOPLE INVOLVED.		Duration.
		Directly.	Indirectly.	
Building	140	15,788	2,098	790,013
Mining and Quarrying	138	46,261	27,426	1,111,227
Metal, Engineering and Shipbuilding..	105	10,287	8,632	351,964
Textile	95	16,181	7,759	412,676
Clothing	32	1,920	14	55,997
Transportation	50	21,330	1,946	331,543
Pottery	5	20,355	215	645,753
Miscellaneous	58	4,139	423	85,792
Total	623	136,256	48,517	3,784,985

LABOR DISPUTES IN GREAT BRITAIN, 1893-1900.

	PROLONGED GENERAL DISPUTES.			ALL OTHER DISPUTES.			TOTAL.
	No. of disputes.	No. of persons involved.	No. of days lost.	No. of disputes.	No. of persons involved.	No. of days lost.	
1893	1	300,000	23,700,000	781	246,396	5,165,052	31,205,082
1894	1	90,000	2,340,000	928	255,248	3,929,010	9,529,010
1895	1	70,000	5,600,000	744	217,123	4,160,670	5,734,670
1896	1	46,000	1,564,000	926	198,190	3,746,368	3,746,368
1897	1	47,500	6,849,000	863	182,767	4,614,523	11,463,523
1898	1	100,000	11,650,000	710	153,900	2,521,478	14,171,478
1899				719	180,217	2,516,416	2,516,416
1900				623	184,773	3,784,985	3,784,985

Holland.—Not even in Belgium and France was trade and commerce injured to such an extent as in Holland by the strikes of dock laborers. Through the greater part of the summer and nearly all through the fall one strike followed after another in Amsterdam and Rotterdam. At first the strikers demanded that all kinds of labor engaged in loading and discharging ships should belong to the Dockers' Union. After the strikes had lasted for some time the employers were forced to submit. Next, a series of strikes ensued for higher wages. In the first of these strikes entered upon by ore unloaders the employers tried to engage foreign labor; this led to riots, until the employers had to deport the foreign workmen. The subsequent strikes were directed toward obtaining a double rate of wages for work done on Sundays and nights, all work from 6 P.M. to 6 A.M. to be considered night-work. On July 12, after the strike had continued more than six weeks, the employers

granted the demands of the carters, and the latter returned to work. This seems to have broken the solidarity among the men, since on July 20 the strike was declared lost, and all the men went back to work. That, however, by no means put an end to the trouble, since for the next three months strikes were incessant, in many cases seriously impeding shipping.

Italy.—The year 1898 is the latest for which data are obtainable. There were 256 strikes, involving 35,705 men and 239,292 days lost. This is a very favorable comparison with 1897, when there were only 217 strikes, involving 76,570 men, but resulting in a loss of more than 1,100,000 working days. Sixty-one per cent. of all the strikes, involving 66 per cent. of all the strikers, were on account of wages; 8 per cent. of all the strikes, involving 5 per cent. of the strikers, were on account of hours of labor, and 31 per cent. of the strikes, affecting 29 per cent. of the strikers, were due to some other causes. The strikers seem to have fared worse than in preceding years, only 27 per cent. of all the strikes having been successful, 46 per cent. being failures and 27 per cent. compromises.

Sweden.—There were 90 strikes and 14 lockouts in 1900, as compared with 62 disputes in 1899; the number of persons involved was 10,200, as against 8667 in 1899; the days lost were 331,660 during 1900 and 205,900 in 1899. The practice of lockouts seems to be growing at an alarming rate, as may be seen from the following figures: The total loss of working days caused by lockouts in 1897 was 500; it increased to 5100 in 1898, 172,200 in 1899, and 189,600 in 1900. During that year the number of men locked out was 4120.

STRONG, WILLIAM L., the last mayor of the old city of New York previous to its consolidation, died November 2, 1900. He was born in Richland County, O., in 1827. He was well known as the head of the firm of William L. Strong & Company which he established in 1869 in New York City, and which for many years was one of the largest and most successful wholesale dry-goods houses in the country. In national politics Mr. Strong was an ardent Republican, but he was elected mayor of New York in 1895 upon a union ticket, defeating the Tammany candidate. His administration has been highly praised for introducing marked improvements in the city government. It was he who appointed the late Colonel Waring street cleaning commissioner, thus obtaining for the city its first well-swept streets. He made Theodore Roosevelt president of the Board of Police Commissioners. His influence was likewise felt in the Department of Public Instruction and in many municipal improvements. Owing to his independent policy, he became an enemy of T. C. Platt, and spoke extensively for Seth Low in opposition to General Tracy in the mayoralty campaign marking the concluding months of his term of office. Conspicuous for his charities, he was at his death treasurer of St. John's Guild.

SUCHOW. See CHINESE EMPIRE (paragraph Cities of China).

SUDERMANN, HERMANN, the great German apostle of realism, produced in 1900 *Johannesfeuer*. See DRAMA (paragraph Drama in Germany).

In the spring of 1900 Sudermann, by a brilliant speech at Berlin, joined Professor Mommsen, Paul Heyse, and Gerhard Hauptmann against the proposal of the imperial government to establish a censorship in art and literature.

Sudermann was born in 1857 at Matzicken, Prussia, and studied at Königsberg and at Berlin. Since 1879 he has lived at Berlin as author and editor. In 1891 he married Klara Lauckner, a German authoress. Sudermann's earlier publications were novelettes and stories. They include: *Im Zwielicht* (1885); *Geschwister* (1887); *Frau Sorge* (1886, English translation, *Dame Care*); *Der Kataensteg* (1889; twenty-first edition, 1894), judged by many critics to be his best prose fiction, and *Es War* (Berlin, 1894). The background of his earlier prose work is formed by the peasantry of eastern Prussia. His stories are, in general, rich in psychological analysis, realistic, and with a tendency toward pessimism.

Sudermann's dramatic work includes: *Die Ehre* (1890); *Sodoms Ende* (1891); *Heimat* (1893, English translation, *Magda*), which renews the favorite theme of the struggle of the individual against the tyranny of tradition; *Die Schmetterlings-schlacht* (1894), a comedy; *Das Glück im Winkel* (1896), a naturalistic play from ordinary life; *Morituri* (1896), three single-act plays, each considering under a changed aspect the imminent prospect of death; *Johannes der Täufer* (1897), and *Die Drei Reiherfedern* (1899, *The Three Heron Feathers*), a somewhat fantastic allegory.

SUEZ CANAL. This waterway, connecting the Mediterranean and Red seas, is 87 miles in length, of which 66 miles are actual canal and 21 miles are lakes. It was opened for navigation in November, 1869. In November, 1875, the British government acquired by purchase shares amounting to £4,000,000 (the value in 1900 being £26,451,000). In October, 1888, a convention was signed exempting the canal from blockade and permitting the vessels of all nations, either armed or unarmed, to pass through both in peace and in war. The vessels passing through the canal in 1898 and 1899 were as follows:

NATIONALITY.	NUMBER.		NATIONALITY.	NUMBER.		NATIONALITY.	NUMBER.	
	1898.	1899.		1898.	1899.		1898.	1899.
British.....	2,295	2,310	Russian.....	48	55	Chinese.....	4	.....
German.....	356	387	Spanish.....	49	39	Argentine.....	1	.....
French.....	221	226	Turkish.....	54	26	Siamese.....	.....	1
Dutch.....	193	200	American.....	4	26	Roumanian.....	1	.....
Austrian.....	85	101	Danish.....	8	21			
Italian.....	74	69	Belgian.....	.....	5			
Japanese.....	46	65	Greek.....	2	4			
Norwegian and			Portuguese.....	2	3			
Swedish.....	49	61	Egyptian.....	10	2	Total.....	3,503	3,607

The total net tonnage in 1898 was about 9,200,000; in 1899, nearly 9,900,000. The passengers in 1897 numbered 191,224; in 1898, 219,671; in 1899, 221,332. Of the last number, about 88,000 were civilians, 24,000 emigrants or pilgrims, and 96,000 soldiers representing several countries as follows: Russia, 17,000; Turkey, 16,000; France, 15,000; Spain, 12,000; the United States, 10,000. In 1899 there was a decline in Indian trade and an increase in Chinese, American, and Australian. The receipts in 1899, which were higher than in any preceding year, amounted to 91,318,772 francs, an increase of 6,024,003 francs over the returns of 1898. The available balance for the year 1899 was about 31,000,000 francs. At a meeting of the shareholders in Paris, on June 7, 1900, the dividend was fixed at 108 francs.

SUGAR INDUSTRY. The statistics collected by Willett & Gray of New York, and published in their Statistical Sugar Trade Journal, show that the world's production during 1900 was considerably greater than in 1899, the increase being apparent in the case of both cane and beet sugars. The following table, which with the other statistics given below has been taken from this authority, indicates the sugar crops of the world, the figures for 1900-01 being based on the most recent returns.

In the following table are included the entire sugar production of all the countries of the world. These figures include local consumptions of home production wherever known.

WILLETT & GRAY'S ESTIMATES OF CANE SUGAR CROPS.

	1900-01.	1899-1900.	1898-99.	1897-98.
United States :				
Louisiana.....	270,000	132,000	245,511	310,447
Porto Rico.....	85,000	35,000	53,825	54,000
Hawaiian Islands.....	312,000	258,521	252,506	304,383
Cuba, crop.....	600,000	308,543	345,361	314,089
British West Indies :				
Trinidad, exports.....	50,000	41,000	53,426	53,000
Barbados, exports.....	70,000	50,000	45,787	47,835
Jamaica.....	30,000	27,000	27,000	30,000
Antigua and St. Kitts.....	25,000	18,000	22,000	25,000
French West Indies :				
Martinique, exports.....	35,000	30,000	31,639	31,469
Guadeloupe.....	35,000	30,000	29,390	37,136
Danish West Indies—St. Croix.....	13,000	12,000	12,000	13,000
Haiti and San Domingo.....	50,000	45,000	50,000	48,000
Lesser Antilles, not named above.....	8,000	8,000	8,000	8,000
Mexico, crop.....	93,000	72,000	50,000	.....
Central America :				
Guatemala, crop.....	9,000	12,000	11,000	9,000
San Salvador, crop.....	5,000	5,000	4,500	4,000
Nicaragua, crop.....	3,500	4,000	3,750	1,500
Costa Rica, crop.....	1,500	1,000	750	500
South America :				
British Guiana (Demerara), exports.....	105,000	80,000	82,000	106,000
Dutch Guiana (Surinam), crop.....	6,000	6,000	6,000	6,000
Venezuela.....	3,000	.....	.....	.....
Peru, exports.....	105,000	100,381	61,910	101,577
Argentine Republic, crop.....	70,000	60,000	72,000	110,000
Brazil, crop.....	178,000	122,700	154,495	200,478
Total in America.....	2,162,000	1,536,145	1,629,760	1,717,784
Asia :				
British India, exports.....	15,000	10,000	10,000	20,000
Siam, crop.....	7,000	7,000	7,000	7,000
Java, exports.....	710,000	726,024	689,281	531,301
Japan (consum'n 170,000 tons, mostly imported).....	.....	3,000	.....	.....
Philippine Islands, exports.....	30,000	62,785	92,000	173,000
China (consumption large, mostly imported).....	.....	.....	.....	.....
Total in Asia.....	762,000	805,809	799,281	736,301

	1900-01.	1899-1900.	1898-99.	1897-98.
Australia and Polynesia :				
Queensland	97,650	194,871	164,341	97,916
New South Wales	19,000	15,500	28,000	26,000
Fiji Islands, exports	33,000	31,000	34,000	30,000
Total in Australia and Polynesia	149,650	171,371	226,341	153,916
Africa :				
Egypt, crop	109,000	99,000	90,822	80,178
Mauritius	190,000	157,025	186,487	121,693
Reunion	35,000	35,000	37,781	31,468
Total in Africa	334,000	291,025	315,090	233,354
Europe—Spain	83,000	83,215	25,000	23,000
Total cane sugar production (W. & G.)	3,440,650	2,887,565	2,095,372	2,864,255
Europe beet sugar production (Licht)	6,020,000	5,535,000	4,982,101	4,831,774
United States beet sugar production (W. & G.)	76,859	72,944	82,471	40,390
Grand total cane and beet sugar—tons	9,537,509	8,445,509	8,009,944	7,736,428
Estimated increase in the world's production	1,092,000			

In the United States, during 1900, both production and consumption were considerably greater than in the previous year. There were no changes in the duties, save in the case of Porto Rico, whose exports of sugar were admitted to the United States at a rate of duty 15 per cent. of that for the product from other countries. The average price of raw sugar (96° centrifugal) during the year 1900 was 4.566 cents a pound, as compared with 4.419 cents in 1899, 4.235 cents in 1898, 3.557 cents in 1897 (the duty being less, as the Wilson Tariff act was then in force), 3.624 cents in 1896, 3.27 cents in 1895, 3.24 cents in 1894, 3.689 cents in 1893, 3.311 cents in 1892, and 3.863 cents in 1891. The price of granulated sugar varied during the year 1900 from 4.752 cents a pound at the beginning of the year to 5.89 in July and August, the average price being 5.32 cents a pound, as compared with 4.919 cents in 1899, 4.905 cents in 1898, 4.503 cents in 1897, 4.532 cents in 1896, 4.152 cents in 1895, 4.12 cents in 1894, 4.842 cents in 1893, 4.346 cents in 1892, 4.641 cents in 1891.

The chief event connected with the manufacture of refined sugar during 1900 was the consolidation of all independent refineries in or near New York, with the single exception of the Arbuckle Company, into one corporation, having the name of the National Sugar Refining Company. The amount of sugar melted in the United States during 1900 was 1,706,000 tons, compared with 1,681,000 tons in 1899 and 1,502,000 tons in 1898.

QUANTITY OF SUGAR CONSUMED IN THE UNITED STATES, 1877 TO 1900 INCLUSIVE.

(Data furnished by Messrs. Willett & Gray, of New York.)

CALENDAR YEAR.	Refined product of sugar imported.	DOMESTIC PRODUCT.					Total.	Consumption per capita.
		Manufactured from imported molasses.	Of cane.	Of maple.	Of beet.	Of sorghum and other.		
1877.....	606,750	35,500	89,000	12,000	446	15,540	745,250	36.0
1878.....	649,872	40,000	71,000	11,000	223	1,377	773,472	36.2
1879.....	663,196	44,900	112,000	10,000	357	1,443	831,896	38.1
1880.....	605,045	50,617	88,822	10,000	357	1,943	956,784	42.7
1881.....	835,261	39,449	127,367	9,000	629	.....	1,012,206	44.2
1882.....	973,720	64,456	76,372	20,000	446	.....	1,134,994	48.4
1883.....	1,021,956	40,732	142,297	18,500	536	.....	1,224,011	51.1
1884.....	1,098,090	50,000	135,243	25,000	737	313	1,309,383	53.4
1885.....	1,122,345	47,259	100,876	25,900	600	1,400	1,298,280	51.8
1886.....	1,232,755	72,613	135,158	18,000	754	.....	1,459,280	56.9
1887.....	1,213,791	62,274	85,594	20,000	255	.....	1,381,714	52.7
1888.....	1,270,629	58,840	167,814	20,000	1,640	360	1,519,283	56.7
1889.....	1,193,761	43,715	153,909	22,000	2,400	689	1,416,474	51.8
1890.....	1,257,292	53,282	136,501	25,000	28,000	1,500	1,476,377	52.8
1891.....	1,614,580	31,320	221,951	15,080	5,400	570	1,888,851	66.3
1892.....	1,597,396	30,000	204,064	9,500	12,000	500	1,853,370	63.8
1893.....	1,628,872	20,000	235,884	10,500	16,000	500	1,906,758	64.4
1894.....	1,700,635	15,000	271,836	5,000	20,443	800	2,012,714	66.7
1895.....	1,572,438	15,000	294,508	7,500	30,000	800	1,949,744	63.4
1896.....	1,670,963	603	243,220	5,000	40,000	800	1,960,086	62.5
1897.....	1,715,607	150	310,537	5,000	39,684	.....	2,070,978	64.8
1898.....	1,708,937	170	252,812	5,000	34,453	.....	2,002,902	61.5
1899.....	1,844,642	5,200	160,400	5,000	62,820	.....	2,078,068	62.6
1900.....	1,950,014	7,647	174,400	5,000	82,736	.....	2,219,847	65.2

Of the total amount of refined sugar consumed in 1900 (2,178,615 tons), 1,465,349 tons, or 67.3 per cent., was manufactured by the American Sugar Company, or the well-known "Sugar Trust;" the independent refiners produced 627,137 tons, or 28.7 per cent., the beet-sugar factories produced 68,386 tons of refined sugar, or 3.1 per cent., while the foreign refiners contributed 17,743 tons, or .9 per cent. Comparing these figures with those for 1899, it is found that in that year the American Sugar Refining Company manufactured 1,385,608 tons, or 68.5 per cent.; independent refiners, 585,765 tons, or 29 per cent.; beet-sugar refiners, 46,826 tons, or 2.2 per cent., and foreign refiners, 5935 tons, or .3 per cent.

Beet Sugar.—The beet-sugar industry in the United States has made important advances during 1900. A number of new factories have been erected, and others are planned for the near future. Several States are giving bounties for the production of sugar beets, and a number of new factories in the West are being worked with success. There were in 1899, according to a census report, thirty-one beet-sugar factories, representing an invested capital of \$20,958,519, which produced an output of beet sugar valued at \$7,323,857. Of these factories eight were located in California, and nine in Michigan, the remainder being distributed among the other States.

The estimated amount of the European beet crops for the year 1900-01 is shown in the following table compiled by Mr. Licht.

	1900-1901.	1899-1900.	1898-99.	1897-98.	1896-97.	1895.
Germany.....tons	1,970,000	1,790,000	1,721,718	1,852,897	1,896,536	1,615,111
Austria....."	1,065,000	1,180,000	1,051,290	881,667	984,007	791,405
France....."	1,170,000	970,000	830,122	821,235	738,081	627,253
Russia....."	890,000	900,000	776,068	788,715	788,667	712,096
Belgium....."	340,000	300,000	244,017	265,897	268,000	222,185
Holland....."	180,000	180,000	148,793	126,558	174,305	104,989
Other countries....."	375,000	275,000	209,015	196,245	202,990	156,340
Tons.....	6,080,000	5,535,000	4,962,001	4,831,774	4,916,496	4,285,429

See MICHIGAN (paragraph Manufactures); MINNESOTA (paragraph Industries).

SULLIVAN, Sir ARTHUR SEYMOUR, the English composer, died November 22, 1900. He was born in London, 1842, the son of an Irish bandmaster, and when 12 years of age entered the choir of the Chapel Royal, where he remained until 1857. Elected Mendelssohn scholar in 1856, he studied at the Royal Academy of Music, and then spent three years at Leipzig. On his return to London in 1862, his music to Shakespeare's *Tempest* was produced at the Crystal Palace. The cantata *Kenilworth*, produced at the Birmingham Festival of 1864, first showed him to be a composer of high rank. Of his oratorios, *The Prodigal Son*, written for the Worcester Festival in 1869, and *The Golden Legend* (1886) are especially good, though they lack spontaneity and earnestness.

It was in the field of light opera and in conjunction with W. S. Gilbert, from 1875 to 1890, that Sir Arthur Sullivan won both his great popularity and his important place in musical history. Sullivan's first attempt in the line had been with *Box and Cox* (1867). *A Trial by Jury* (1875) was the first success of the two partners, but they became famous with *H. M. S. Pinafore* (1878), whose words and music took by storm the public of both England and America. This opera with *The Sorcerer* (1877), *The Pirates of Penzance* (1880), *Patience* (1881), *Iolanthe* (1882), *Princess Ida* (1884), *The Mikado* (1885), *Ruddigore* (1887), *The Yeoman of the Guard* gave a name to the Savoy Theatre, which was built for them. *The Mikado* was nearly as successful as *Pinafore*. It is difficult to say how far the success was due to the composer and how far to the witty librettist; Sullivan had the gift of melody, a musical humor, and a grasp of the technique of light opera; Gilbert had a sharp wit, a deftness of rhyming, and great skill in construction. Though he satirized the foibles of the year, his humor in *Patience*, for instance, outlived the æsthetic fad which it satirized. *The Gondoliers* (1889) and *Utopia Limited* (1893) were almost complete failures. Meanwhile, the collaborators had a misunderstanding, which led to their separation, and the occasional combination of their talents hereafter gave them no mutual success. In 1892 Sullivan wrote *Haddon Hall* with an unfortunate libretto by Sydney Grundy. His latest score known in this country was the delightful opera, *The Rose of Persia* (1899). Among Sir Arthur Sullivan's other compositions are overtures, ballets, and symphonies, many well-known hymn tunes and songs, including "Let Me Dream Again" and "The Lost Chord" and a grand opera of little merit, *Ivanhoe*, written in 1891. He was knighted in 1883.

SULPHUR. The amount of sulphur produced in the United States forms but a small percentage of the total quantity consumed. In fact more than half of the

amount used is obtained from the mineral pyrite (see PYRITE) instead of from native sulphur. Small as it was, the United States production in 1899 was 30 per cent. greater than the combined output of the two previous years. The material was mined in Calcasieu Parish, La., Humboldt County, Nev., El Paso County, Tex., and Beaver County, Utah, and amounted to 4830 short tons, valued at \$107,500. That this forms but a small percentage of the whole consumed in the United States is evident, when it is stated that the annual domestic consumption amounts to about 350,000 long tons. The twenty-first annual report of the United States Geological Survey contains a description of the Sicilian sulphur industry.

SUMATRA. See DUTCH EAST INDIES.

SUNDAY-SCHOOL ASSOCIATION, New York State, is interdenominational, and includes nearly 9000 Sunday-schools, with a membership of nearly 1,500,000. Five district field secretaries or missionaries, under the direction of the missionary committee, are devoting their entire time to the work, in promoting various lines of associated efforts throughout the State. In addition many of the counties support county missionaries. Rev. A. F. Schaffler, D.D., New York, is chairman of the executive committee; Rev. A. H. McKinney, New York, State superintendent of Sunday-school work; Timothy Hough, Syracuse, secretary and treasurer.

SUNDAY-SCHOOL UNION, AMERICAN, was founded originally in Philadelphia in 1817 as the Philadelphia Sunday and Adult School Union. Uniting with other societies, it adopted its present name in 1824. Its objects are: "To concentrate efforts of Sabbath-school societies, disseminate useful information, and endeavor to plant a Sunday-school wherever there is a population." This society has distributed over \$9,000,000 worth of religious literature, maintains about 100 permanent missionaries, and has organized an average of over 1300 Sunday-schools a year for 75 years. The seventy-fifth annual meeting was held in Philadelphia in May, 1899. President, Morris K. Jesup, corresponding secretary, John R. Whitney. Headquarters, 1122 Chestnut Street, Philadelphia.

SUNDBERG, ANTON NIKLAS, Swedish statesman and archbishop, died February 1, 1900. Born in Uddevalla, May 27, 1818, he was educated at Upsala, where in 1842 he received his degree with distinction. He studied theology, and in 1849 he became an assistant in that subject at Lund, where, after travelling in Germany, France, and England, he was given a professorship in 1852. As a teacher in the university he was an active opponent of the Free Church movement, and, as may be seen in *Svensk Kyrkotidning*, which he edited with E. G. Bring and W. Flensburg, he was an ardent supporter of the Lutheran State Church. In 1861 he became cathedral provost in Lund, in 1864 bishop of Karlstadt, and in 1870 archbishop of Upsala and vice-chancellor of the university. He always took an active interest in the improvement of the archbishopric and the university, and in 1874 was a member of the commission for the revision of the university statutes. Sundberg was not less active in politics. On becoming a member of the *Reichstag* in 1859, he supported the extreme Right and spoke against reform in representation. He occupied an important place in the Second Chamber, of which he was president from 1867 to 1872, and also in the First Chamber, of which he was a member from 1876 to 1892, and where in 1878-80 he acted as president. He refused appointment to several places of honor. In the later years of his life he exercised great influence in the ecclesiastical legislature of Sweden. From 1874 to the time of his death he was one of the eighteen immortals of the Swedish Academy. His writings include: *Jakob Ulfsson, Svea rikets erkebiskop, 1470-1515* (1877); *Om två af vår tids farligheter: moral utan religion och religion utan moral* (1873); *Om den kyrkliga bekännelsens vigt och betydelse* (1879); *Ar det önskvärdt, att förbindelsen mellan stat och kyrka i vårt land upplöses?* (1885); *Om den moderna socialdemokratien och hennes förhållande till det kristliga samhället* (1891).

SWEDEN, the eastern part of the Scandinavian peninsula, had an area, according to the latest official surveys, of 172,919 square miles, and an estimated population on December 31, 1898, of 5,062,918. The largest cities are Stockholm, with a population at the beginning of 1899, of 295,789; Göteborg, 123,105; Malmö, 57,836; Norrköping, 39,654, and Gefle, 27,363. Up to 1894 the number of emigrants was very large, averaging 40,000 annually, of whom the greatest part went to the United States. Since 1894, however, there has been a steady and rapid decline, there being only 14,500 emigrants in 1897 and even less the following years. The Lutheran Church is the state religion, and other sects are numerically insignificant. The Jews in 1890 numbered 2281 and the Roman Catholics 876. The state universities of Upsala and Lund had an attendance in 1900-01 of 1458 and 619 respectively. In 1899 there were nearly 25,000 students in the secondary schools, while 827,296 children attended the primary schools. In 1898, 18,478,838 kroner (krone equals 26.8 cents) were spent on education, and 13,500,000 kroner were distributed by the counties in

charitable relief. The revenue of the state is derived from customs, excise, income tax, post, and the exploitation of the railroads, telegraphs, and telephones. The customs in 1898 amounted to 53,907,443 kroner and in 1899 to 62,158,761 kroner. For 1900 they were estimated at nearly 70,000,000 kroner. The budget for 1900 stood 137,307,000 kroner, both income and expenditures. Sweden has been enjoying great prosperity for the last eight or nine years. Statistics show that the taxable value of property has risen 100 per cent. within twenty-five years, that savings have increased sevenfold, agricultural production has doubled, foreign commerce trebled, and the annual value of manufactures increased from \$35,000,000 to \$125,000,000. Emigration has almost ceased, and the population is rapidly increasing. The cereal crop of 1899 was: Wheat, 14,525,400 hectolitres (hectolitre equals 2.838 bushels); rye, 7,554,000 hectolitres; corn, 4,119,900 hectolitres, and oats, 18,923,000 hectolitres. The chief mineral products are iron, lead, tin, and copper. In 1898 the yield of iron ore was 2,302,546 tons; pig iron, 523,960 tons; cast iron, 198,923 tons, and steel of all kinds, 558,629 tons. The manufactures of the country have developed rapidly. In 1897 there were 8974 factories, employing 220,202 hands; and 78,541 master workmen and apprentices working in small shops. The value of manufactures for that year was 783,504,243 kroner. The wood industry is the most important of the manufactures; next comes iron, with 499 iron and steel works, and 296 machinery shops in 1898. Of textile factories there were 355. The chief imports are minerals, machines, textile manufactures, foodstuffs, skins, and hides; the principal exports are minerals, timber, live animals, and foodstuffs. In 1898 the imports amounted to 455,249,346 kroner and the exports to 344,909,154 kroner. The foreign trade, with Germany and England especially, is rapidly increasing. In 1897 Germany imported into the country goods to the value of \$36,206,000; in 1898, \$42,370,800; in 1899, \$49,365,600. The imports from England in 1898 were worth \$37,278,800; in 1899, \$41,432,800. England sent in coal chiefly, and Germany small articles of manufacture. Fifty-two per cent. of the imports and 42 per cent. of the exports were transported in Swedish bottoms. The total tonnage in 1899 of the merchant marine was 555,074 comprising 1008 steamers, of 277,492 tons, and 1784 sailing vessels, of 277,582 tons. Göteborg, on the Cattegat, is the chief port, Stockholm, the capital, on the Baltic, ranking second. At the beginning of 1899 there were 6436 miles of railway, of which a little more than one-third was owned by the state. In 1897 the state owned 5450 miles of telegraph out of a total of 8594 miles. The telephone system in the same year embraced about 73,000 miles of wire. The army comprises troops raised by enlistment and by conscription. The regimental ranks are never completely filled, the peace strength being 36,265 men and 1905 officers, while the war footing is 52,300 men; in case of war the complete force would amount to about 100,000 men. In 1900 the military appropriations amounted to 27,457,000 kroner. The Swedish navy is intended primarily for coast defence. It comprises 10 completed armored ships, ranging from 1500 to 3400 tons. The *Dristighen*, of 3500 tons, was laid down in 1899, and since then three others of the same type and of 3670 tons have been started. Sweden is a constitutional monarchy. The king, aided by a council of state, wields the executive power, and legislates in conjunction with the Diet of the realm. This Parliament comprises the First Chamber, consisting of 150 members, chosen for nine years by the provincial diets and some municipal corporations, and the Second Chamber, consisting of 230 members, elected by property holders throughout the country. The reigning king is Oscar II., King of Sweden and Norway.

History.—For the relations between Sweden and Norway during 1900, see NORWAY. Political parties and legislation in Sweden have been influenced greatly by the controversy with Norway. In January, 1900, a group of ninety members of Parliament formed a Liberal party and issued a programme, intended to conciliate all factions by offering concessions to each party. Their demands included the perfect and unconditional equality of Norway and Sweden, the extension of the suffrage within the kingdom, the granting of pensions to invalidated workmen by the state, and state insurance of workmen against injury or accidental death. Special stress was laid upon the matter of courts of arbitration with definite powers. The need for such courts was demonstrated by a lockout of all the builders in Copenhagen, which lasted from May 15 to the middle of June, and was finally settled by arbitration. Laws regulating woman and child labor were passed by the Diet. The discussion in the Chamber centred mostly about the budget and the new commercial and financial conditions created by the probable establishment of a separate consular service for Norway. The government estimates were voted, the Chambers showing themselves especially liberal in their appropriations for the army and the navy. To further the foreign commerce of the country, proposals were made for the reform of the consular service and the establishment of a central bureau, which should keep Swedish merchants in touch with the information collected by consuls. September 12 the president of the council of state, Bostroem, Conservative, resigned.

SWEDENBORGIANS. See NEW JERUSALEM, CHURCH OF THE.

SWIMMING AND WATER POLO. The national amateur swimming championships were held on September 29 at Travers Island, N. Y. E. C. Schaeffer won the 100-yard in 1.05 $\frac{3}{4}$ (record), the 220-yard in 3.07 $\frac{1}{2}$, and the 440-yard in 6.52 $\frac{1}{2}$; Dr. W. G. Douglas won the half-mile in 14.45 $\frac{3}{4}$, and G. W. Van Cleaf the mile in 34.00 $\frac{3}{4}$, the races being swum across tide. In England, Jarvis again broke many records and won all the Amateur Swimming Association championships from the 440-yard up. In a 220-yard race (bath) Derbyshire and Lane, the two great rivals in the sprints, swam a dead heat and broke the world's record made by Lane the previous year. The new record, jointly held, is 2.34 $\frac{1}{4}$. Derbyshire reduced the 300-yard record to 3.37 $\frac{1}{4}$. The Knickerbocker Athletic Club won the national water polo championship at Boston on March 3; Columbia won the intercollegiate water polo series.

SWITZERLAND, or the Helvetic Confederation, is a federal republic of central Europe, bounded on the north by Germany, on the east by the Australian Tyrol, on the south by Italy, on the southwest and west by France. It has an area of 15,976 square miles, and a population, estimated in July, 1899, at 3,144,741. The largest cities in 1899 were Zurich, with a population of 151,983; Basel, 101,724; Geneva, 91,288; Berne, 55,472; Lausanne, 44,466; St. Gallen, 35,517. In 1899 the emigration from Switzerland was 2493, of which number 2151 came to the United States. In 1900 there were 4413 primary schools, with 479,254 pupils; 500 secondary schools, with 34,755 students, and 115 normal and middle schools, with an attendance of 17,362. There are universities at Basel, Zurich, Berne, Geneva, and Lausanne, and high academies at Fribourg and Neuchâtel. In 1899-1900 the courses in philosophy, medicine, law, and theology were attended by 4804 students, of whom 1134 were women. Religious freedom is enjoyed by all creeds, though the Jesuits are not tolerated. Of the total area, 28.4 per cent. is unproductive, and less than one-sixth is under crops and gardens. The chief agricultural industries are the manufacture of cheese and of condensed milk. The canton of Vaud is a great vine-growing country, but suffered greatly in 1899 and 1900 from the phylloxera, which devastated the vineyards. The ground in great part has been replanted with American vines, which are immune from the pest, but three years must pass before a vintage can be had. Switzerland trades chiefly with France, Germany, Italy, Great Britain, Russia, and the United States. In 1898 the imports amounted to 1,016,821,672 francs, and the exports to 712,991,532 francs. In 1899 the imports were worth 1,172,147,583 francs, and the exports 802,382,011 francs, the United States contributing 5 per cent. of the imports, taking 11 per cent. of the exports. From January 1 to October 1, 1900, the special imports amounted to 814,028,091 francs, excluding coin, and the exports to 609,874,636 francs. Switzerland during the last few years has gained new and distant markets, sending her watches, jewelry, and ribbons to China, India, and the Soudan. During the first nine months of 1899 foreign tourists spent 200,000,000 francs in the country. In 1897 there were 373 savings banks in the country with 1,291,910 depositors and 214,675,861 francs deposits. In January, 1898, there were 2316 miles of railway, all of which the state will acquire in 1903. In 1898 there were 4435 miles of telegraph lines owned by the state, and 1231 miles of private lines. The estimated revenue for 1900 was 102,270,000 francs, and the expenditure, 102,990,000 francs. The chief sources of revenue are customs, posts and telegraphs, and the principal items of expenditure are the posts, army, interior, telegraphs, and interest on the public debt. The debt on January 1, 1899, amounted to 84,392,065 francs, and the national property to 167,700,564 francs. Switzerland has no standing army, but every citizen of the republic between the ages of 20 and 55 is liable to military duty, and children are trained from an early age in gymnastics and military science. The total forces of the nation are divided into the *Elite*, which consisted in 1900 of 148,435 men, the *Landwehr* of 85,576 men, and the *Landsturm* of 275,596 men. The country is divided into 19 cantons and six half-cantons, the most important being Berne, Zürich, Vaud, St. Gallen, and Aargau. The legislative and executive power is vested in a federal assembly of two houses, the state council, consisting of 44 members, elected two from each canton, and the national council, consisting of 147 members, elected for three years by popular vote in each canton, one for every 20,000 inhabitants. The federal assembly chooses the *Bundesrath*, or executive council, and the president of the confederation. At the demand of 30,000 citizens any measure of the federal assembly must be submitted to a popular vote for revision or annulment, on the principle of the *referendum*. The president in 1900 was Walther Hauser, of Zürich, and the vice-president, Ernest Brenner, of Basel.

HISTORY.

During 1900 the referendum was thrice resorted to for the settlement of very important questions, and the results proved that the democracy in Switzerland is more conservative than the small bodies of men constituting the two houses of the

national legislature. In October, 1899, the federal assembly, with only one dissenting vote, passed a law providing for the compulsory insurance of workmen against accident and disease. On May 20 the law came before the people, and was rejected by 337,000 votes to 146,000. Many reasons were advanced for such an astounding reversal of the legislature's action. More important than the insurance law were the questions submitted to the people on November 4. Two amendments to the constitution were proposed, one concerning the federal council, or executive board (see preceding paragraph), the other concerning the national council, or the lower house of the legislature. The amendment provided for the election of members of the federal council by the people at large. This proposal had the support of the Liberals, the Radicals, and the Socialists, and had been agitated for over ten years, but the people rejected it by 266,637 votes against 141,851. The second amendment provided for the election of the national council by proportional vote instead of by majority vote. The tendency of this measure was to prevent the absolute domination of the majority by giving the minority representation in proportion to its numbers, and each canton, instead of being divided into districts, was to elect its quota of representatives as a whole. The Conservatives favored this measure because they were in the minority, but this amendment was also rejected by 242,448 votes against 166,065.

On May 14, 1900, Switzerland concluded an extradition treaty with the United States.

SYNÆSTHESIA, a term invented by psychologists to denote a curious class of mental phenomena, some but not all of which have been already known by the name of colored hearing, audition coloree, synopsis, etc. By synæsthesia is meant the awakening of one quality or kind of sensation by a stimulus ordinarily found to arouse another kind. The most familiar example is that of a person who sees or seems to see a patch of color before his eyes while hearing musical or other sounds. These phenomena have not been observed to imply any pathological condition on the part of the persons studied. There seems to be no limit to this extraordinary connection of sensations, and no fixed or even general order of their appearance. Theoretically, any one of the nerves which carry specific sensations would be capable of being excited by a stimulation of any other nerve. So that if we should accept the number 10 as being the total number of specific sensation qualities (of which, beside the so-called "five senses," the following are the most important: temperature, muscular, cutaneous, and organic sensations), we should have 10 times 10, or 100 possible combinations. Of this number only the following have been observed. Photisms, or secondary sensations of light or color, have been aroused by sounds of various kinds, including music by taste and by smell, and phonisms, or secondary sensations of sound, have been aroused by sensations of pain, pressure, and temperature. A peculiarity of the synæsthetic phenomena is the sensation of a different quality aroused in the field of the same sense—e.g., in vision—where ordinary black printed letters are said by some persons to have certain definite colors. This exteriorization of imagined colors suggested by letters and words has been observed in a far greater number of cases than any other similar sensation connection, and is carried even further by some individuals who give human attributes to letters, figures, and colors. This is in effect an inversion of the circumstances so common in emotional life—viz., the constant attributing of emotions or ethical values to colors aside from their synthesis with form. During 1900 two papers, one of extraordinary interest, were published on this subject. The first was "Two Cases of Synæsthesia" (*American Journal of Psychology*, Vol. II., No. 3, April, 1900, pp. 377), by Dr. G. M. Whipple, of Cornell University. This paper describes laboratory experiments where the subject was first seated in a noiseless dark room, the natural change of retinal colors observed and telephoned to the experimenter in another part of the building, who recorded them and noted the time at which they occurred. Then the photisms aroused by simple noises and tones produced by tuning forks were observed and described. The experimenter recorded the visual sensations called forth in the subject by various kinds of music while the subject sat with covered eyes. After the eyes were uncovered he selected from a plate of printed colors the shade which matched the color of his or her visual sensation. Auditory impressions were produced while the subject was looking at large screens, black or one of four colors, hanging about eight inches from the face. The colors aroused by tastes and odors are then described, and other so-called synæsthetic phenomena, such as the coloring or personification of words or letters of the alphabet, are described. In certain experiments the subject was able to fix upon the absolute pitch of the sound of a badly injured finger, and in tests where the point of a Griesbach æsthesiometer was used to exert pressure various sensations of tone were evoked, though no constant relation between the number of grams pressure and the pitch of the tone was found. In the case of one subject temperature produces not only color effects but also tones—e.g., putting his hands into cold water gives the sensation of red, while cold spots

and cold points on various parts of the body gave tones of from B to F of the third octave. These tones caused by pressure, temperature, and pain are unique in the history of psychology, and are all the more remarkable as having been established after careful laboratory research, and in a subject with trained powers of introspection. The other paper was read by Paul Sokolov at the Fourth International Congress of Psychology (*q.v.*) at the Paris Exposition, and contains reports of a number of cases. Sokolov suggests that two sensations of dissimilar qualities, such as sight and hearing, are likely to be involuntarily linked in the mind, provided that they arouse the same general ideas or the same emotions. Thus, as lilac is a very agreeable color to one of his subjects, it is natural that she should ascribe that color to persons whom she admires for their intellectual and moral qualities. The metaphorical use of words in all languages illustrates the origin of the tendency to represent objects of one sense in terms strictly applicable only to another. Such are the use of the word "tone" to denote a quality both of sound and of color, and the words "bright" and "dull" applied to the intellect. Sokolov maintains that synesthesia, of the colored-hearing type at any rate, is thus "nothing but the realization of metaphors."

SYSTEMATIC ZOOLOGY. See ENTOMOLOGY (paragraph Systematic Works).

TAFT, WILLIAM H., judge of the United States Circuit Court, was selected by President McKinley to be president of the Philippine Commission, appointed in March, 1900, to establish civil government in the Philippines. Judge Taft was born in Cincinnati, O., September 15, 1857, and graduated from Yale in 1878, and from the law school of Cincinnati College two years later. He practised law from 1883 until 1887, when he was appointed judge of the Superior Court. In 1890 he was appointed solicitor-general of the United States, and in 1892 United States circuit judge. He was dean and professor in the law department of the University of Cincinnati. Judge Taft's appointment was generally approved. See PHILIPPINES.

TAKU. See CHINESE EMPIRE (paragraph Cities of China).

TALC. The total product of the United States in 1899 was 54,655 tons. A small quantity of this talc is also imported, the product, which in 1899 amounted to 254 short tons, coming chiefly from Canada. It is used to some extent for paint and wall plasters, and is most important in its application to weighting intermediate grades of paper, though it is not used in either the very common or the higher grades.

TALIHNWAN. See CHINESE EMPIRE (paragraph Cities of China).

TAMMANY, SOCIETY OF, organized in New York in 1789, has a membership of about 11,000. Its organization was the result of a popular movement against the so-called aristocratic tendencies of the Society of the Cincinnati (*q.v.*). Nominally a charitable and social organization, it has always been essentially democratic in its character, and almost from the first an active political organization. Its activities have been confined to New York City, though it has made attempts to influence both State and national conventions of the Democratic party. The political machine of the society is the general committee of the Tammany Democracy. Grand sachem, Thomas L. Feitner; secretary, Thomas F. Smith. See CROKER, RICHARD.

TARIFF. See POLITICAL AND SOCIAL SCIENCE, AMERICAN ACADEMY OF.

TAREKINGTON, BOOTH, an American writer, who published in 1900 a finished little romance of the eighteenth century entitled *Monsieur Beaucaire*, is a Princeton graduate of 1893. While at college he was a cartoonist and editor of the *Tiger*. His first book, *A Gentleman from Indiana*, was one of the notable books of 1899. *Monsieur Beaucaire* is a most artistic story, full of charm and spirit, with a dramatic finish.

TASMANIA, one of the states of the Australian federation (*q.v.*), situated about 80 miles south of Australia. Its area, including the adjacent small islets, is 26,385 square miles, and its population was estimated in 1899 at 182,300. The capital is Hobart, with a population of over 40,000. The state is administered by a governor appointed by the crown. There is a Parliament consisting of the Legislative Council and the House of Assembly. The former consists of 19 members elected on a property qualification for a term of six years. The House of Assembly consists of 38 members elected for a term of three years. The qualification for electors for members of the House of Assembly are an annual income of not less than £40. and 12 months' residence in the state. The legislative power is in the hands of the Parliament, while the executive is vested in the governor, who is also commander-in-chief of the state army. There is also a cabinet of 6 members. The principal industries in the state are agriculture and stock raising. In 1899 there were 258,542 acres under crops and 238,799 acres under sown grasses. The live stock of the state on March 1, 1900, consisted of 1,672,068 sheep and lambs, 160,204 head of cattle, 31,189 horses, and 74,451 pigs. A large part of the area of the state is covered with

forests abounding in valuable woods. Rich and varied deposits of minerals are found, and the exports in 1899 were as follows: Copper, £761,880; tin, £281,947; silver, £208,869, and gold, £205,936. Coal and iron are also found in many parts of the state. The commerce for 1899 shows a considerable increase over the preceding year. The total value of the imports and exports for 1899 was £1,769,324 and £2,577,475 respectively, against £1,650,018 and £1,503,369 in 1898. The total registered shipping in 1899 was 44 steamers and 156 sailing vessels, with an aggregate tonnage of 15,379.

The total railway mileage of the state in 1899 was 547. The total capital invested in the government lines up to December, 1899, was £3,604,222. The gross receipts and working expenses of the government lines for 1899 amounted to £193,158 and £152,798 respectively, leaving a profit of £40,360. The telegraph lines of the state, which belong to the government, have a total length of about 2000 miles, including 428 miles of submarine cable. There are also over 800 miles of telephone lines and 355 post-stations. Education is compulsory, but not free. According to the report of the director of education for 1899 there were 309 government schools at the end of the year, with an enrolment of 23,272. The total amount spent by the state on education in 1899 was £40,049, while the amount collected from pupils during the same year was £10,948. Higher education is provided by 18 superior schools or colleges, which have an average attendance of about 2000. There were, besides, 241 private schools, with an attendance of 8781. The revenue of the state is derived chiefly from customs, public services, and from the sale and lease of crown lands. The revenue and expenditure for 1899 amounted to £943,970 and £871,453 respectively, showing a considerable increase both in the revenue and the expenditure as compared with the preceding year. The public debt of the state at the end of 1899 amounted to £8,395,638, against £8,412,904 at the end of 1898.

History, 1900.—In January Sir P. O. Fysh was appointed a member of the delegation sent to London for the purpose of giving all the explanations and assistance necessary for the passage of the Commonwealth bill through Parliament. The general election held in March resulted in a decisive victory for the ministerial supporters. See AUSTRALIAN FEDERATION.

TAXATION. See ECONOMIC ASSOCIATION, AMERICAN.

TAYLOR, WILLIAM S. See KENTUCKY (paragraph the Goebel Feud).

TELEGRAPHY AND TELEPHONY. See PHYSICS.

TENNESSEE, a central Southern State of the United States, has an area of 42,050 square miles. The capital is Nashville. Tennessee was admitted as a State, June 1, 1796.

Mineralogy.—The coal production of the State has exhibited an uninterrupted increase since 1893. The total product in 1899 was 3,330,659 short tons, spot value, \$2,940,644, a gain of 307,763 tons and \$603,132 over 1898. The production of iron ore was 333,342 tons of brown hematite and 298,704 tons of red hematite; in all, 632,046 long tons, value, \$694,372. Tennessee ranked third in 1899 as a marble producer, the value of the product being \$384,705. Other quarry products were: Limestone, \$208,097, and slate, \$250. The output of copper ore was 100,022 tons, and 750 men were engaged in this industry. Phosphate mining gave employment to 5037 men, and the production of phosphate rock was 462,561 tons.

Agriculture.—The following shows the production and value of the principal crops for 1900: Corn, 56,997,880 bushels, \$27,928,961; wheat, 11,696,088 bushels, \$9,239,910; oats, 5,810,166 bushels, \$2,033,558; barley, 25,622 bushels, \$15,886; rye, 124,267 bushels, \$84,502; potatoes, 1,365,660 bushels, \$792,083, and hay, 313,432 tons, \$3,698,498. The *Bulletin* of the National Association of Wool Manufacturers estimated the wool clip of 1900 as follows: Number of sheep, 235,875; wool, washed and unwashed, 1,002,469 pounds; wool, scoured, 601,481 pounds.

Industries.—Grain and fruit distilleries in operation during the fiscal year ending June 30, 1900, numbered 136. The amount of fruit brandy produced was 44,073 gallons; spirits rectified, 1,100,519 gallons; distilled spirits gauged, 3,695,585 gallons, and fermented liquors produced, 136,143 barrels. In 1899 there were 69 cigar factories and 63 tobacco factories, and their combined output for the calendar year was 6,325,313 cigars, 1,579,405 pounds of plug tobacco, 320,185 pounds of smoking, and 3,050,068 pounds of snuff. The production of pig iron in 1899 was 346,166 long tons, and in 1900, 362,190 tons, a gain for the latter year of 16,024 long tons. In 1899 453 men were employed in the manufacture of coke, and the output was 440,157 tons, valued at \$864,073. During 1900, 6 new cotton mills were established, which contained an aggregate of 49,500 spindles and 724 looms.

Commerce.—During the fiscal year ending June 30, 1900, the imports of merchandise at the ports of Chattanooga, Knoxville, Memphis, and Nashville aggregated in value \$1,644,525, nearly all of which was received at Chattanooga; exports, none.

Railways.—The new railway construction reported for the calendar year 1900

amounted to 87.25 miles, giving the State a total mileage of 3189.26. The total value of railroad property in October, 1899, as returned by the State railroad commissioners, was \$55,296,413.

Banks.—On October 31, 1900, there were 82 national banks, of which 7 were insolvent, 24 in liquidation, and 51 in operation. The active capital aggregated \$7,352,645; circulation outstanding, \$3,379,830; deposits, \$24,210,210, and reserve held, \$6,478,388. State and private banks June 30, 1900, numbered 56, and had capital stock, \$2,806,315; deposits, \$7,303,710, and resources, \$11,137,312; and stock savings banks, 7, with capital, \$372,500; depositors, 19,687; deposits, \$2,015,472, and resources, \$4,222,493. Twenty-six building and loan associations had 4795 members and assets aggregating \$2,874,097. The exchanges at the clearing houses at Memphis, Knoxville, Chattanooga, and Nashville during the year ending September 30, 1900, aggregated \$252,370,221, a net increase of \$35,999,820 for the year.

Finances.—The assessed valuations for 1900 were: Land, \$171,527,025; town lots, \$120,338,355; other taxable property, \$48,493,768; total, \$340,359,148, an increase, compared with 1899, of \$31,644,182. The tax levy in 1900 was \$0.35 per \$100. The balance in the State treasury December 20, 1898, was \$85,071; receipts for the two years ending December 19, 1900, \$6,120,232; total, \$6,205,303. Expenditures for the two years, \$6,095,300; balance in treasury December 20, 1900, \$110,003. The total bonded debt at the close of 1900, including old bonds unfunded, was \$16,953,267, a decrease in two years of \$398,600.

Education.—The school population in June, 1900, was 768,843, of whom 573,287 were white and 195,556 colored. The enrolment in the public schools was 384,643 white pupils and 100,750 colored; total, 485,393. There were 7954 schools, 7184 schoolhouses, 9195 teachers, and public school property valued at \$3,063,568. Reports from 33 superintendents of city schools show a scholastic population of 110,605, with an enrolment of 51,595. The city schools numbered 129 and the teachers 956. The total expenditure for the public schools during the year was \$1,751,047. In 1899 there were 101 public high schools, with 226 teachers and 5334 secondary students; 102 private secondary schools, with 334 teachers and 5505 secondary students; 1 public normal school, with 26 teachers and 604 students in normal courses; and 13 private ones, with 61 teachers and 1202 students in normal courses. Twenty-four colleges and universities for men and for both sexes reported 358 professors and instructors, 5071 students in all departments, and a total income of \$480,775; and 12 colleges and seminaries for women reported 165 professors and instructors, 1554 students in all departments, and a total income of \$160,600. The professional schools comprised 8 theological schools, with 44 instructors and 229 students; 7 law schools, with 51 instructors and 259 students, and 8 medical schools, with 161 instructors and 1871 students.

Population.—According to the United States census, the population in 1890 was 1,767,518; in 1900, 2,020,616; increase for the decade, 253,098, or 14.3 per cent. The four largest cities, with population in 1900, are: Memphis, 102,230; Nashville, 80,865; Knoxville, 32,637, and Chattanooga, 30,154.

Boundary-line Between Tennessee and Virginia.—On April 30, 1900, the United States Supreme Court reaffirmed its decision of April, 1893, determining that the true boundary-line between Virginia and Tennessee was that established by compact between those two States in 1803. The case arose on appeal from Virginia to have the boundary-line established along the parallel of 36° 30' north latitude in accordance with the ancient grant of that State from the English sovereign. The court held in its decision that as the true boundary-line had been partially obscured through lapse of time, a commission should be appointed to "retrace, remark, and re-establish" it; and the court appointed on this commission Mr. William C. Hodgkins, of Massachusetts; Mr. James B. Baylor, of Virginia, and Mr. Andrew H. Buchanan, of Tennessee. It was ordered that the costs of the commission should be borne equally by the two States.

Elections.—At the State elections in 1900, Benton McMillin, the Democratic nominee for governor, had 145,708 votes, and McCall, the Republican nominee, had 119,831 votes. McMillin's plurality was 25,877. Of the ten representatives to Congress, the two Republicans were returned to the 57th Congress and all the Democrats, with the exception of Nicholas N. Cox (Dem.), of the seventh district, who was succeeded by Lemuel P. Podgett (Dem.), and E. W. Carmack (Dem.), of the tenth district, who was succeeded by M. R. Patterson (Dem.).

The State Legislature in 1900 consisted of 5 Republicans and 28 Democrats in the Senate and 22 Republicans and 77 Democrats in the House. In 1901 the Legislature will consist of 5 Republicans and 28 Democrats in the Senate and 23 Republicans and 76 Democrats in the House. At the national election McKinley received 123,394 votes, and Bryan received 145,744 votes. In 1896 McKinley received 148,773, and Bryan, 166,268 votes. Thus, Bryan's plurality was increased from 17,495 in 1896 to 23,557 in 1900.

State Officers and National Representatives.—State officers for 1900: Executive—governor, Benton McMillin; secretary of state, W. S. Morgan; treasurer, E. B. Craig; commissioner of agriculture, Thomas Paine; superintendent of public instruction, M. C. Fitzpatrick; comptroller, Theodore F. King; adjutant-general, H. C. Lamb; attorney-general, G. W. Pickle—all Democrats.

Supreme Court: Chief justice, David L. Snodgrass; associate justices, W. C. Caldwell, J. S. Wilkes, W. K. McAllister, W. D. Beard, A. W. McMillin. Court of Chancery Appeals: Justices, M. M. Neil; S. F. Wilson, R. M. Barton, Jr.; clerk James Turney—all Democrats.

State officers for 1901: Executive—same as for 1900.

Judiciary: Same as for 1900.

Congressional representatives for 1900 (56th Congress): Republicans, W. P. Brownlow (Jonesboro), Henry R. Gibson (Knoxville); Democrats, John A. Moon (Chattanooga), Charles E. Snodgrass (Crossville), J. D. Richardson (Murfreesboro), J. W. Gaines (Nashville), N. N. Cox, Thetus W. Sims (Linden), Rice A. Pierce (Union City), E. W. Carmack.

Congressional representatives for 1901 (57th Congress): Same as for 1900, except that L. P. Podgett (Dem.), from Columbia, and M. R. Patterson (Dem.), from Memphis, replace Cox and Carmack.

Senators for 1900 (56th Congress): Thomas B. Turley (until 1901) and William B. Bate (until 1905)—both Democrats.

Senators for 1901 (57th Congress): William B. Bate (until 1905), from Nashville; vacant.

TERTIARY. See GEOLOGY.

TEXAS, a southwestern State of the United States, has an area of 265,780 square miles. The capital is Austin. Texas was admitted to the Union December 29, 1845.

Mineralogy.—Texas is not usually considered among the mining States, yet it has great resources of minerals, and only lacks exploration and capital. At the now famous Lucas well oil has been struck at a depth of 2000 feet. A great rush of speculators followed the strike, and fully 5,000,000 acres in the vicinity of Beaumont, where the oil find was made, have been leased and will be drilled. The year 1899 was the eighth successive year in which the coal product showed an increase over the preceding one. The total output was 883,832 short tons, spot value, \$1,334,895. The increase over 1898 was 197,098 short tons, the gain being practically all in bituminous coal. The yield of petroleum for 1899 was 699,013 barrels, value, \$473,443; iron ore, 14,729 long tons of brown hematite, value, \$13,262; gold, 339 fine ounces, value, \$7000; silver, 500,000 fine ounces, value, \$355,000. Quarrying yielded three varieties of stone, the respective values of which were: Granite, \$84,945; sandstone, \$35,738; and limestone, \$100,025—in all, \$220,708.

Agriculture.—At the close of the season 1899-1900 it was found that Texas led all the States in the production of cotton, with a total commercial crop of 2,438,555 bales. The preliminary estimate of the crop of 1900-01 by federal officials placed the cotton acreage at 7,041,000 acres, and the yield at 226 pounds of lint cotton per acre. The area devoted to the cultivation of rice in 1900 was estimated at 60,000. The following shows the production and value of other crops for 1900: Corn, 81,962,910 bushels, \$38,522,568; wheat, 23,395,913 bushels, \$14,973,384; oats, 28,278,232 bushels, \$8,483,470; barley, 50,405 bushels, \$36,292; rye, 64,630 bushels, \$43,302; potatoes, 916,918 bushels, \$806,888, and hay, 548,879 tons, \$3,732,377. The assessment rolls for 1900 show that the live stock in the State comprised: Horses and mules, 1,548,733, \$31,520,054; cattle, 6,308,254, \$68,196,416; jacks and jennets, 14,565, \$402,168; hogs, 1,390,931, \$2,298,894; goats, 382,435, \$419,955, and sheep, 1,571,603, \$2,333,822. The wool clip for 1900 was estimated at 14,485,225 pounds of washed and unwashed wool, and 4,345,567 pounds of scoured wool.

Industries.—In 1900 Texas ranked second among the States in the production of yellow pine lumber. Shipments from January 1 to December 1 aggregated 428,975,205 feet, and the total amount cut during the same period was 454,874,779 feet. In 1899 there were 168 cigar factories and 21 tobacco factories in the State, and the production for the calendar year was 13,201,404 cigars, 39,880 cigarettes, 50,623 pounds of smoking tobacco, and 220 pounds of plug. Grain and fruit distilleries in operation numbered 15, and the amount of fruit brandy produced during the fiscal year ending June 30, 1900, was 219 gallons; spirits rectified, 324,013 gallons; distilled spirits gauged, 650,186 gallons, and fermented liquors produced, 349,066 barrels. The production of pig iron in 1900 was 10,150 tons, against 5803 tons in 1899. During 1900 there were 332 commercial and business failures—1.19 per cent. of the 27,852 business concerns in the State.

Commerce.—During the fiscal year ending June 30, 1900, the imports of merchandise at five ports aggregated in value \$5,606,351; exports, \$95,985,258. The



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PLATE I. THE GALVESTON DISASTER.—1. Wreckage near the Roman Catholic Cathedral. 2. Wreck of an engine and train at Virginia Point, opposite Galveston. 3. A British steamer carried across Galveston Bay and stranded in three feet of water at Texas City.

movement of gold and silver was: Imports, \$12,828,478; exports, \$8600, making the total foreign trade, \$114,428,687, an increase in a year of \$6,153,732.

Railways.—During the year ending June 30, 1900, the railroads of the State performed a service equal to hauling 3,622,669,413 tons of freight one mile, an increase of 1,851,170,834 tons over a like haul for the year ended June 30, 1891. The freight revenue to the roads for the fiscal year 1899-1900 amounted to \$34,492,371, or \$16,333,681 less than the amount would have been had the freight rates of 1891 continued to prevail. Of new railroad, 405.11 miles were built during the two years ending June 30, 1900, and since then more than 300 additional miles were put under construction, of which 139 miles had been completed by January, 1901. The total new construction reported for the calendar year 1900 amounted to 318.85 miles. Texas led all the States in new construction in 1900, and ranked second in total mileage, with an aggregate at the close of the year of 10,078.38.

Banks.—On October 31, 1900, there were 314 national banks, of which 22 were insolvent, 60 in liquidation, and 232 in operation. The active capital aggregated \$19,919,951; circulation outstanding, \$8,190,621; deposits, \$49,995,980, and reserve held, \$13,613,004. There were also, on June 30, 1900, 41 private banks, whose capital amounted to \$1,235,450; deposits, \$2,276,604, and resources, \$4,708,933. Two stock savings banks had capital, \$135,000; depositors, 2980; deposits, \$584,424, and resources, \$947,139. During the year ending September 30, 1900, the exchanges at the clearing houses at Galveston, Houston, and Fort Worth aggregated \$329,632,600, a net increase for the year of \$5,124,570. Houston and Fort Worth showed a gain in exchanges of \$23,462,270, but the exchanges at Galveston diminished \$18,337,700, the decrease being due to the storm which devastated the city early in September.

Finances.—The balance in the State treasury, September 1, 1899, was \$1,092,808; receipts during the year ending August 31, 1900, \$2,859,967; disbursements, including transfers, adjusting accounts, \$2,793,188; balance in treasury, August 31, 1900, \$1,159,587. The total bonded debt, August 31, 1900, was \$3,989,400, of which \$3,271,200 was held by special funds and \$718,200 by individuals. The assessed valuations for 1900 were: Land (132,102,824 acres), \$399,516,682; town and city lots, \$189,760,828; other property, \$355,042,748; total, \$946,320,258, an increase in a year of \$23,393,027. The rate of taxation was 16½ cents per \$100 for general revenue, and 18 cents for school purposes; total, 34¾ cents per \$100.

State Institutions.—On November 1, 1900, the population of the several charitable institutions was as follows: Insane asylums, 2561, an increase in two years of 575; deaf and dumb asylum, 344, an increase of 66; blind asylum, 172, an increase of 15; deaf, dumb, and blind institute for colored youths, 71, a decrease of 18. On September 1, 1900, the number of children in the State orphan home was 304. The State convicts, October 31, 1900, numbered 4109—365 less than on October 31, 1898—and the number of boys in the House of Correction was 183. Three hundred and ninety-three pardons were issued between January 13, 1899, and January 10, 1900, and 415 persons were restored to citizenship. The loss incurred in running the penitentiaries is gradually being reduced. The average monthly loss of the Rusk Penitentiary for the period beginning March 1, 1899, and ending November 1, 1900, was \$4517, and of the Huntsville Penitentiary, \$1624.

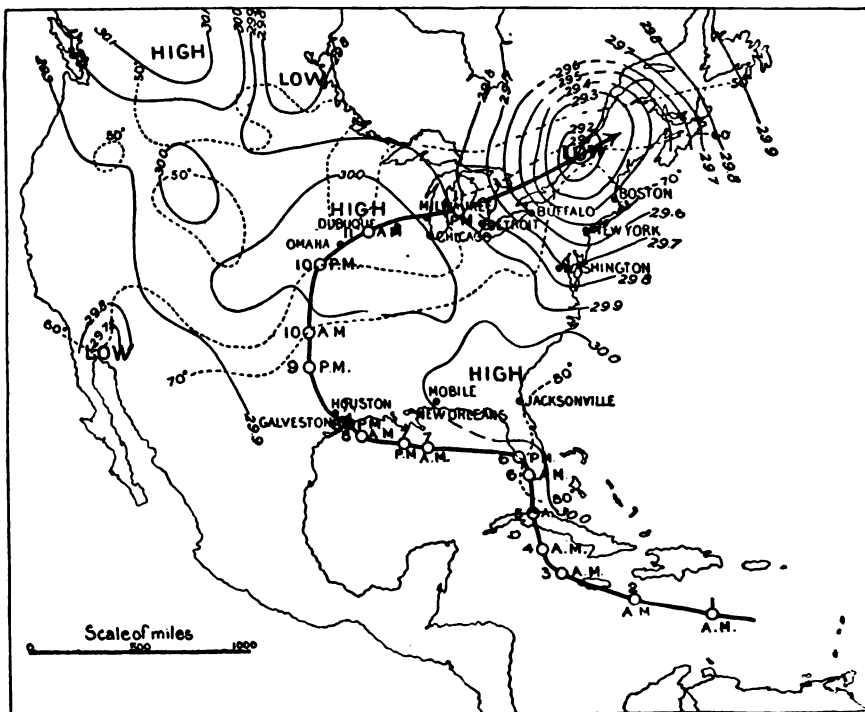
Education.—The scholastic census shows that the number of children of school age at the close of 1900 was 729,445, an increase in a year of 22,899. For the two years ending August 31, 1900, the available school fund aggregated \$495,596, an increase over the period 1896-98 of \$368,766. On December 1, 1900, the State university reported 750 students and 44 professors and instructors, and the agricultural and mechanical college reported 339 students and 24 professors and instructors.

In 1899 the school census showed a total enumeration of 706,050 children between the ages of 8 and 17. The enrolment in the public schools was 552,503, and the average daily attendance, 370,055. There were 14,989 teachers, of whom 3140 were colored; 10,667 buildings used as schoolhouses, and public school property valued at \$7,490,300. The total school revenue was \$4,528,178, and the expenditures, \$4,476,457, of which \$4,030,188 was for teachers' and superintendents' salaries. The average expenditure per pupil for the whole school year was \$12.10. There were 201 public high schools, with 516 teachers and 12,945 secondary students; 64 private secondary schools, with 287 teachers and 4619 secondary students; 3 public normal schools, with 20 teachers and 523 students in normal courses, and 6 private ones, with 31 teachers and 631 students in normal courses. Sixteen colleges and universities for men and for both sexes reported 236 professors and instructors, 3645 students in all departments, and a total income of \$302,833; 1 school of technology reported 21 professors and instructors, 356 collegiate and graduate students, and a total income of \$74,780, and 5 colleges and seminaries for women reported 63 professors and instructors, 647 students in all departments, and a total income of \$70,064. The professional schools comprised: One theological school, with 1 instructor and 5 stu-

dents; 2 law schools, with 10 instructors and 169 students, and 2 medical schools, with 32 instructors and 290 students.

Population.—According to the United States census, the population in 1890 was 2,235,523; in 1900, 3,048,710; increase for the decade, 813,187, or 36.4 per cent. Texas now ranks fifth among the States in population. The three largest cities with population in 1900 are: San Antonio, 53,321; Houston, 44,633, and Dallas, 42,638. In June, 1900, Galveston had a population of 37,789, but since the census was taken the city has been partially destroyed by wind and flood.

Galveston Disaster.—On Saturday morning, September 8, a storm broke over Galveston which became a hurricane on the following afternoon and reached its maximum a little after midnight Sunday. Galveston was submerged by from four to five feet of water upward. On the seaward side every building was obliterated for three blocks inland. Communication with the mainland was cut off, steamships were stranded or broken up, the lighting and water supply of the city was cut off, and food supplies were damaged or lost. The loss of life was estimated at about 3000, and the loss of property at from \$20,000,000 to \$30,000,000. At many points along the main shore north of Galveston lives were lost and property destroyed. Rations and tents were supplied by the government and money and provisions were forwarded from Texas and many private associations in various sections of the country. Beyond the actual damage done there was a large financial loss in suspended industry



TRACK OF WEST INDIAN HURRICANE, 1900.

resulting from the fact that Galveston has of late years been assuming importance as an export port. It is the second export cotton port of the United States, exporting cotton for the fiscal year of 1900 to the extent of \$63,271,121. Its total exports for that period were \$85,606,991, which made it the fifth port in importance of the United States. Galveston was connected with the mainland by three trestle bridges owned respectively by the Atchison, Topeka & Santa Fé railway system, the Missouri, Kansas & Texas, and the Southern Pacific system. These lines connected with steamships to New York, Key West, Bremen, Liverpool, and various other foreign ports. The United States Government had recently constructed at a cost of over \$8,000,000 a system of jetties by means of which a depth of 29 feet of water at Galveston permitted the entrance of the largest ocean-going vessels. Directly after the disaster it was feared that transportation interests would not rebuild on account

of the possibility of another hurricane. Later, however, assurances were given that the damage would be repaired so soon as possible, the railway trestles and terminals rebuilt, and also the steamship wharves. On account of its position Galveston forms the natural outlet for the products of the southwest of the country, of which cotton is the most important. The course of the West Indian hurricane which devastated Galveston is thus described by the professor of meteorology of the United States Weather Bureau: "The storm was first noted near the Windward Islands of the West Indies in the closing days of August. During the first days of September the storm moved westward over the Caribbean Sea, and recurved northward over west-central Cuba. By the night of September 6 its centre had reached the southern Florida peninsula. From there the storm made an abnormal curve to the westward, which, as usual with such storms, greatly increased its intensity, and it then passed directly over Galveston. The maximum wind velocity reported was 96 miles an hour, and the lowest barometric reading, 28.53 inches. The principal agent of destruction at Galveston was water from the Gulf of Mexico and Galveston Bay. The northerly gale which was blowing before the tempest came threw waves from Galveston Bay upon the island, while simultaneously against that gale a storm wave from the gulf, impelled by the advancing hurricane, flooded the island from the seaward side. The floods thus produced exceeded by eight or nine feet any previous flood which ever visited the city of Galveston." In an article in the *National Geographic Magazine* Mr. W J McGee, formerly of the United States Geological Survey, asserted that the geographic position of Galveston necessarily exposed the city to recurrent dangers. Galveston is built upon the east end of a low-lying sand-bank or key, some thirty miles long and six or seven miles wide at the place of greatest breadth. The earth of the island is composed of sands, silts, and mud, deposited by wave and current action and in general uncemented by calcareous or silicious substances. The elongation and gradual slope of the island indicate that it is in effect a storm record, levelled by great but infrequent tempests. Moreover, the fact that Galveston Island is the last of the west-coast system of keys, and that between it and Atchafalya Bay there are numerous submerged keys, prove that the land has been subsiding for many centuries, and "that it is merely by chance of weather history that Galveston so long survived." Finally, "it should not be forgotten that of all localities on the gulf coast Galveston is most exposed; it is the last of the great natural embankments of the west coast remaining unsubmerged, and hence is open to a wider range of gales than any other; it is the point of contact, between opposing forces, the land subsidence on the one hand and wave building on the other hand."

Right of Negroes to be Impannelled for Jury Duty.—On April 16, 1900, the United States Supreme Court handed down a decision overruling the decision of the Texas Court of Criminal Appeals and quashing an indictment for murder found by the Galveston grand jury on November 24, 1897, against a negro named Seth Carter. It appeared from the record that the negro in question before he had been arraigned or had pleaded to his indictment had moved to the court that the indictment against him be set aside for the reason that the grand jury, in accordance with a custom extending for many years past, had been impannelled from lists of white men only, though negroes constituted about one-fourth of the people and voters of Galveston, and because this exclusion of negroes from the grand jury deprived the defendant of the equal rights guaranteed to him by the Constitution, and because the indictment was therefore illegal. The motion was denied by the court, and the negro was tried and convicted of murder in the first degree. The Supreme Court held its decision that the motion of the negro should have been granted by the Texas court, and it held also that "whenever, by any action of a State, whether through its Legislature, through its courts, or through its executive or administrative officers, all persons of the African race are excluded solely because of their race or color from serving as grand jurors in the criminal prosecution of a person of the African race, the equal protection of the laws is denied to him, contrary to the fourteenth amendment of the Constitution of the United States."

Legislation.—Among acts passed by the Texas Legislature in 1900 were the following: Directing that independent school districts should have seven instead of six trustees, and that the trustees should serve for two instead of four years; extending the time for the repayment of the principal of money used to purchase schools; setting aside 4,140,195 acres of land for purposes of the State school funds; prohibiting teachers, trustees, or superintendents of schools from acting as agents for textbooks; reducing the amount to be levied on every \$100 of real property in the State from 20 to 16⅓ cents; authorizing the submission to the voters of the State of a constitutional amendment permitting in certain counties taxation for purposes of irrigation. This amendment was defeated at the elections in November.

Elections.—At the State elections in 1900 the Democratic candidate Joseph D. Sayers received 283,850 votes, and Hannay, the Republican candidate, received 109,172. The Democratic plurality was 174,678. F. A. Williams (Dem.) was elected

associate justice of the Supreme Court. The present State government and judiciary are controlled entirely by the Democratic party.

All of the 13 representatives to the 56th Congress were returned to the 57th Congress with but two exceptions: J. W. Bailey (Dem.) of the fifth district was succeeded by C. B. Randell (Dem.), and R. B. Hawley (Rep.) was succeeded by George F. Burgess (Dem.) in the tenth district. In the State Legislature in 1900 there were 1 Republican and 30 Democrats in the Senate, and 1 Republican, 118 Democrats and 9 Populists in the House. In the Legislature of 1901 there will be 31 Democrats in the Senate and 127 Democrats and 1 Populist in the House.

In the national election McKinley received 121,173 votes and Bryan received 267,243. In 1896 McKinley received 167,520 votes and Bryan received 290,862 votes. Thus Bryan's plurality was reduced from 202,914 in 1896 to 146,760 in 1900.

State Officers and National Representatives.—State officers for 1900: Executive—governor, Joseph D. Sayers; lieutenant-governor, J. N. Browning; secretary of state, D. H. Hardy; treasurer, J. W. Robbins; comptroller, R. W. Finley; superintendent of public instruction, J. S. Kendall; commissioner of agriculture, Jefferson Johnson; adjutant-general, Thomas Scurry; commissioner of General Land Office, Charles Rogan; attorney-general, T. S. Smith—all Democrats.

Judiciary: Supreme Court—Chief Justice, Reuben R. Gaines; associate justices, T. J. Brown and F. A. Williams; clerk, Charles L. Morse—all Democrats.

State officers for 1901: Executive—same as for 1900 except that R. M. Love and C. Rogan replace Finley and Johnson as comptroller and commissioner of agriculture respectively.

Supreme Court: Same as for 1900.

Congressional representatives for 1900 (56th Congress): T. H. Ball (Huntsville), S. B. Cooper (Beaumont), R. C. De Graffenreid (Longview), J. L. Shephard (Texarkana), J. W. Bailey, R. E. Burke (Dallas), R. L. Henry (Waco), S. W. T. Lanham (Weatherford), A. S. Burleson (Austin), R. B. Hawley, Rudolph Kleberg (Cuero), James L. Slayden (San Antonio), J. H. Stephens (Vernon)—all Democrats except Hawley (Rep.).

Congressional representatives for 1901 (57th Congress): Same as for 1900, except that C. B. Randell (Dem.) and G. F. Burgess (Dem.) replace Bailey and Hawley.

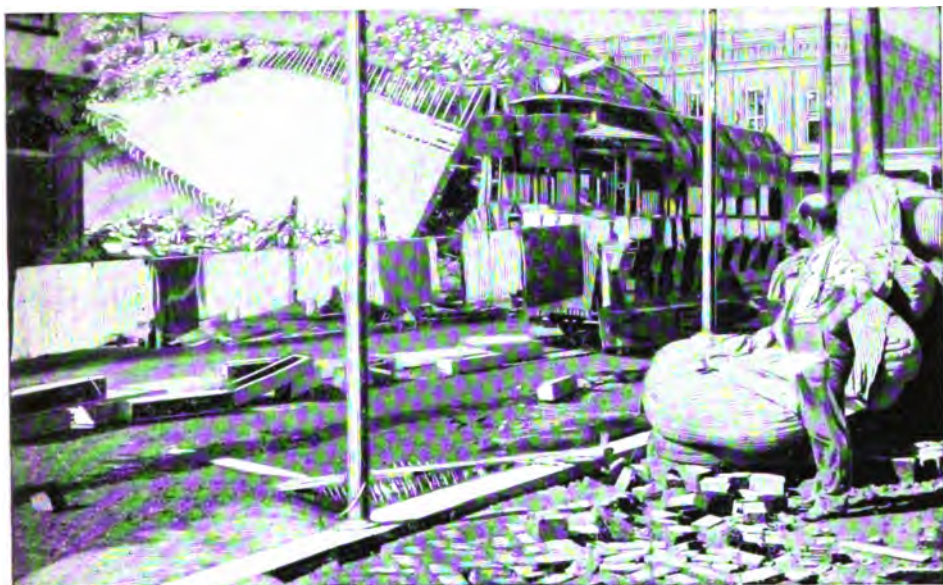
Senators for 1900 (56th Congress): Horace Chilton (until 1901) and C. A. Culberson (until 1905)—both Democrats.

Senators for 1901 (57th Congress): C. A. Culberson (until 1905) from Dallas; one vacancy.

TEXAS, UNIVERSITY OF, Austin, Tex., with medical department at Galveston, opened 1883, and is one of the important colleges of the South. It had in 1899-1900 a faculty of 83, and a student body, omitting duplicated names and 171 students in the summer school, of 870, as follows: Literature, science, and arts, 561; law, 169; medical, 222. The library contains about 35,000 volumes, the additions of the past two years being 3677 books, of which 2450 were gifts. Revised entrance requirements, formulated in 1899-1900, are to go into effect in 1902, and there has been an adjustment of the requirements of the three academic degrees, A.B., B.L., and B.S., making them substantially equal. Recent additions to the equipment include the enlargement of University Hall, at a cost of about \$26,000, and other permanent improvements aggregating in cost about \$42,000. In the Galveston storm of September 8, 1900, the medical department buildings were damaged to the extent of about \$60,000, rendering them unfit for use. Temporary repairs were made, and the school opened its year on November 15. The total university income of the year was \$169,145.

THOMPSON, ERNEST (EVAN) SETON, an American artist and author, was born in South Shields, England, August 14, 1860, and spent the years 1866-87 in Canadian woods and on the plains of the West. He was educated at the Collegiate Institute, Toronto, and the Royal Academy of London; and from 1890-96 studied art at Paris. Much of his extensive knowledge of wild life was acquired during his service as naturalist to the government of Manitoba province. To science he has contributed *Birds of Manitoba*, *Mammals of Manitoba*, and *The Art Anatomy of Animals*; but he is best known for the eight popular sketches published as *Wild Animals I Have Known* (1898). During 1900 Mr. Thompson published *The Biography of a Grizzly*, and was prominently in demand as a lecturer.

THOMPSON (JAMES) MAURICE, the American author, was born at Fairfield, Ind., September 9, 1844; afterward resided in Kentucky and Georgia. He fought through the Civil War in the Confederate army, and then practised law at Crawfordsville, Ind. In 1878 he was a member of the State Legislature and in 1885-89 State geologist. He has been an editor of the *New York Independent*, and has published *Hoosier Mosaics* (1875); *The Witchery of Archery* (1878); *A Tallahassee Girl* (1882); *Songs of Fair Weather* (1883); *Byways and Bird Notes* (1885); *The*



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PLATE II. THE GALVESTON DISASTER.—1. The principal business street after the hurricane. 2. Relief workers clearing a street in the residence district. 3. Ruined cottages near the ocean front.

Story of Louisiana (1888), and *The Ethics of Literary Art* (1893). In 1900 appeared the long-projected *Alice of Old Vincennes*, a narrative of adventurous warfare in the frontier Indiana of 1779.

THOMPSON, RICHARD WIGGINTON, ex-secretary of the navy, died at Terra Haute, Ind., February 9, 1900. He was born in Culpeper County, Va., June 9, 1809, went to Kentucky in 1831, and then removed to Lawrence County, Ind. In 1834 he was admitted to the bar, and during the next two years was a member of the lower house of the Indiana Legislature and of the State Senate in 1836-38. For a short time he was president of the Senate and acting lieutenant-governor. He was a member of Congress in 1841-43. He was a delegate to the National Republican conventions of 1868 and 1876. In 1867-69 he was judge of the fifth Indiana circuit, and in 1877-81 served as secretary of the navy in the Hayes cabinet. In the latter year he became chairman of the American committee of the Panama Canal Company. He wrote: *Footprints of the Jesuits; The Papacy and the Civil Power; History of the Tariff; Personal Recollections of Sixteen Presidents.*

TIENTSIN. See **CHINESE EMPIRE** (paragraph Cities of China).

TIN. In spite of the many rumors, the United States still fails to show a single tin deposit of value, much less to produce any ore of this metal, and as a result the imports into this country continue to be very large. The world's production still comes largely from the Straits Settlements. The output from all countries during 1900 is given in long tons as follows: Straits Settlements, 46,041; Banka, 12,843; Billiton, 5678; Bolivia, 4350; Cornwall, 3910; Australia, 3200; total, 76,022. The total amount shows an increase of 2278 tons over the production for 1899. During the year 1900 there was imported into the United States 69,068,568 pounds of tin valued at \$19,458,586, a decrease from the total imports in 1899, amounting to 16,746,105 pounds.

TOBACCO. The following table, giving, in dutiable pounds, the imports of tobacco into the United States, is taken from the monthly summary, for December, 1900, of the Bureau of Statistics of the United States Treasury Department:

LEAF.	1898.		1899.		1900.	
	Lbs. dut.	Value.	Lbs. dut.	Value.	Lbs. dut.	Value.
For cigar wrappers.....	5,064,997	\$5,081,359	4,158,076	\$4,293,574	6,440,108	\$5,562,849
All other.....	6,242,833	8,498,803	13,119,909	7,496,965	16,752,003	9,305,055
Total leaf.....	11,307,830	\$8,580,162	17,277,985	\$11,790,539	23,192,106	\$14,867,907

Of these totals, 4,120,717 pounds, valued at \$2,832,497 (in 1898), 11,029,548 pounds, valued at \$7,025,684 (in 1899), and 14,935,662 pounds, valued at \$8,837,234 (in 1900), came from Cuba.

MANUFACTURED.	1898.		1899.		1900.	
	Lbs. dut.	Value.	Lbs. dut.	Value.	Lbs. dut.	Value.
Cigars, cigarettes, and cheroots	350,731	\$1,731,816	459,311	\$2,289,399	477,467	\$2,313,160
All other.....	.....	58,983	.....	57,725	.....	72,634
Total manufactured.....	.....	\$1,790,749	.....	\$2,340,124	.....	\$2,385,994

From the same source are taken the following figures, giving the exports of domestic tobacco from the United States:

UNMANUFACTURED.	1898.		1899.		1900.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Leaf.....	258,307,664	\$28,518,770	335,804,511	\$39,049,643	296,876,477	\$36,691,701
Stems & Trimmings	11,759,169	278,099	11,019,166	336,099	8,156,758	194,671
Total.....	269,966,833	\$28,796,869	346,823,677	\$39,385,742	305,033,235	\$36,886,372

Of these totals, 82,227,418 pounds, valued at \$7,934,225 (in 1898), 125,807,585

pounds valued at \$11,141,719 (in 1899), and 99,398,240 pounds, valued at \$9,381,018 (in 1900), were shipped to the United Kingdom.

MANUFACTURED.	1898.		1899.		1900.	
	M.	Value.	M.	Value.	M.	Value.
Cigars.....	2,080	\$39,074	3,576	\$90,146	2,572	\$65,304
Cigarettes.....	1,225,958	2,309,581	1,150,308	2,053,991	1,126,904	2,118,947
	<i>Lbs.</i>		<i>Lbs.</i>		<i>Lbs.</i>	
Plug.....	8,916,186	2,080,184	9,864,253	2,223,682	11,972,796	2,611,421
All other.....		756,625		883,809		942,405
Total.....		\$5,135,464		\$5,300,628		\$5,738,167

Of which amounts, shipments valued at \$890,695 (in 1898), \$822,947 (in 1899), and \$1,008,316 (in 1900), went to the United Kingdom.

The values of exports of foreign tobacco from the United States for the last two years are given below, in order to determine the amount of imported tobacco consumed in the United States:

LEAF.			MANUFACTURED.		
	1899.	1900.		1899.	1900.
For cigar wrappers.....	\$630,893	\$528,188	Cigars, cigarettes and cheroots..	\$22,399	\$36,080
Other.....	432,136	470,365	All other.....	3,518	84,704
Total.....	\$1,063,018	\$998,553	Total.....	\$25,917	\$70,784

An estimate of the tobacco crop by States of the Department of Agriculture was made in 1896, and is given below in order of production:

	Production in pounds.	Area in acres.	Value in dollars.
Kentucky.....	143,633,850	196,745	6,032,302
North Carolina.....	68,629,170	134,567	5,490,334
Virginia.....	57,961,260	92,008	3,013,936
Tennessee.....	35,211,000	53,351	2,464,316
Ohio.....	23,668,880	32,012	1,006,000
Pennsylvania.....	16,344,280	13,844	1,369,542
Connecticut.....	10,197,450	6,579	1,325,668
Maryland.....	9,377,100	15,995	398,915
Indiana.....	8,130,760	11,937	365,834
Mississippi.....	7,406,000	10,580	666,540
Wisconsin.....	5,088,000	3,975	279,840
West Virginia.....	3,685,680	5,119	313,283
New York.....	3,389,360	3,250	271,149
Massachusetts.....	3,199,500	1,975	333,940
Illinois.....	2,497,380	3,903	237,262
Arkansas.....	1,827,500	2,950	146,085
All other.....	3,446,580	5,897	502,704
Total.....	403,004,320	594,749	24,256,070

The largest crop since 1882 was that of 1888, when total production of the above States aggregated 565,795,000 pounds, valued at \$43,666,665.

TOBAGO. See TRINIDAD.

TOGOLAND. See COLONIES.

TOLSTOY, LEO (LYOFF or LYEFF) NIKOLÁYEVICH, Count, was, perhaps, the most conspicuous of novelists during 1900. Early in the year the enthusiasm aroused by *Resurrection* was at its height. Certain critics of technique deemed the story disconnected; but no one denied that, as a whole, it is worthy of the author of *Sebastopol, War and Peace*, and *Anna Karénina*. A new edition of his works in twelve volumes, edited by Nathan Haskell Dole, appeared and also a volume of *Essays, Letters, and Miscellanies*, collected from magazine articles written by Tolstoy himself and by his admirers. During the year he wrote a play, called *The Corpse*, in which a worthless husband is persuaded by the man who wishes to marry his wife to disappear, as though dead, in order that the marriage may be consummated. The husband does make way for his rival, but finally reveals the secret. The three parties to the deception are sent to Siberia for bigamy, where a *dénouement*, similar to that in *Resurrection*, relieves the situation. He wrote also an article on suicide.

pointing out that inasmuch as life is given us not for our pleasure, but as an opportunity of perfecting ourselves, there is no excuse for cutting it short. His remarks in *Resurrection* concerning "the meaningless much-speaking," "the blasphemous incantation over bread and wine," and other criticisms of the Established Church brought upon him the excommunication which had been threatened for thirty years.

TONGA ISLANDS. See **FRIENDLY ISLANDS.**

TONQUIN, a French dependency, forming a part of French Indo-China, borders the Gulf of Tonquin, between Anam on the south and the Chinese provinces of Yünnan, Kwang-si, and Kwantung on the north. The country is divided into fourteen provinces, whose area is placed at 119,660 square miles and the number of inhabitants at 12,000,000. The capital and most important city is Hanoi, an aggregation of villages with a population of about 150,000. Since 1897 the government of Tonquin has been in the hands of an official French resident under the governor-general of French Indo-China, who is also stationed at Hanoi. Besides a part of the French army of occupation in Indo-China, there are in Tonquin nearly 15,000 native troops. According to the budget of 1899, the local revenue amounted to about 3,993,000 piastres, while the French budget of 1900 showed an expenditure for Tonquin of 390,000 francs. The principal crop is rice, the export of which is sent largely to Hong Kong; other important products are sugar, cotton, silk, fruits, tobacco, pepper and coffee. Iron and copper are mined. Coal deposits are worked to a small extent at Kebao and at Hongay, which is near Haiphang, the chief port and trading centre of the country. In 1898 the imports amounted to 43,661,000 francs, of which 20,413,000 francs were credited to France or her colonies, and the exports were valued at about 16,425,000 francs. In addition there is a land trade with Yünnan. There is a railway 64 miles in length, and several new lines have been projected. One of these the French propose to extend into Chinese territory as far as Yünnan City. See **INDO-CHINA.**

TOWNE, CHARLES ARNETTE, was nominated for the vice-presidency of the United States by the Populist Convention held at Sioux Falls, S. Dak., in May, 1900 (see **PRESIDENTIAL CAMPAIGN**, paragraph Other Conventions), on the national ticket with William Jennings Bryan. He withdrew after the nomination of Adlai E. Stevenson by the National Democratic Convention. Mr. Towne was born in Oakland County, Mich., November 21, 1858. He was admitted to the bar and settled in Duluth, Minn. In 1895 he was sent to Congress on the Republican ticket, but the following year he left the Republican National Convention, because of its advocacy of the gold standard, and became one of the strongest advocates of free silver. In 1897 he was appointed chairman of the National Silver Republican party, and in 1899 he received the vote of the Minnesota Legislature as Fusion candidate for the United States Senate.

TRADE UNIONS. *Belgium.*—The progress of the trade-union movement in the course of the year can best be brought out by tracing its development in the leading industrial countries of the world. The second national congress of Belgium trade unions met at Brussels December 24-25, 1900. According to the returns of the census of the trade unions, it appeared that there were about 62,000 trade unions in Belgium, or 6.64 per cent. of the working people. Taking the figures by sexes, 9.21 per cent. of all men were organized as against 1.7 per cent. of all the women. The per cent. of organized workers in various trades ranges from less than 1 per cent. in the building trades to 30 per cent. in transportation. The miners and quarrymen are organized to the extent of 10 per cent.; metal trades, 7 per cent.; tobacco workers, 9 per cent.; glass workers, 28 per cent.; printing trade, 25 per cent. The total number of working people was 822,976, of which 620,937 were men, and 193,039 women.

Canada.—The Canadian Trades and Labor Congress was held at Ottawa in September, 1900. The Congress submitted to a vote of the members of all the affiliated trade unions the question of the advisability of forming an independent labor party. The result of the vote was expressed in the following resolution passed by the congress: "In the opinion of this congress the result of the referendum vote on independent political action is of sufficient strength to justify the congress in taking such steps as may be deemed advisable to further progress of such action." In addition another resolution was passed instructing the trade unions to nominate candidates for Parliament wherever they felt strong enough to do so. Two trade unionists have been elected to the Dominion Parliament since the adoption of the resolution. The next congress will be held in September, 1901, in the city of Brantford.

Denmark.—According to the official returns for 1900 there were nearly 100,000 trade unionists in Denmark in that year. It is estimated that over 75 per cent. of the male workers, and about 25 per cent. of the female, are organized. The proportion varies for different trades, being as high as 95 per cent. in the building trades.

France.—In 1899, the latest year for which there are available statistics, there were 2361 trade unions in France, with a membership of 419,761. There are two central labor organizations in France trying to embrace the unions of the various crafts. One is known as the *Confédération Générale du Travail*, and the other as the *Fédération des Bourses du Travail de France*. The former was founded in 1895 and is composed of 15 national and departmental unions, with a membership of 107,000, or about one-fourth of the total union membership of the country. The latter was founded in 1892 and is proving to be a more vigorous, successful and promising organization. The Eighth National Congress of the Federation of Labor Exchanges was held at Paris in September, 1900. Among the questions considered by the congress was the creation of a national labor statistical employment office. The congress approved the organization of the office, but urged the executive committee to exercise care lest it supply employers of striking workmen with other men. It also adopted the American method of using union labels to identify goods made by union labor and decided to establish a museum of labor in connection with each labor exchange, to contain samples of products together with statistics, and also a national labor museum under the executive committee of the federation. Each local museum is to send an exact copy of its every new accession to the National Museum, which will thus serve as the central place of information for the whole country. Among other questions considered by the congress was Technical instruction. The local exchanges had been asked to express their opinions as to (a) whether the possession of technical education tends to raise wages; (b) whether it has served to raise technical skill of workmen in general; (c) whether the workmen benefited by it have remained in the ranks and been loyal to the principle of solidarity to their comrades, or have become foremen, supervisors, etc.; (d) whether it would be advisable to add to the technical instruction of adult workmen elementary instruction of their children.

Germany.—From the report of the central executive committee of the German trade unions (*Generalkommission der Gewerkschaften Deutschlands*), it appears that the trade-union movement in Germany has been making great progress. Since the organization of the central committee in 1891, the total membership of the unions affiliated with it has increased from 277,659 to 580,473 in 1899 (including 19,280 women), the increase during the latter year being 89,100 members. The increase continued also in 1900, although no exact figures are available as yet. The central committee conducted a very energetic and successful campaign against the proposed law introduced by the German government in the *Reichstag*, which, under the plausible pretext of protecting non-union laborers from intimidation in case of strikes, was designed to put an effective check on the growth of trade unions in the empire. Under the initiative of the central committee, a conference of the various national unions was held in Hamburg, in April, 1900. Although no definite and binding decisions were formulated, the discussion of the mutual grievances helped to clear up a good deal of hitherto controversial ground, and it is expected that a satisfactory arrangement will be arrived at before long. The committee publishes a weekly paper which is constantly growing in circulation. In addition to these trade unions, whose membership is largely and leadership entirely socialistic, there is another federation of unions known as the *Gewerkvereine*. The latter are opposed to socialism, believe in a policy of co-operation with, rather than resistance to employers, and concentrate their chief efforts in mutual aid in case of sickness, unemployment, etc.

Great Britain.—According to the returns of the English Board of Trade, there were 1292 trade unions in 1899 (the latest figures available), having 14,540 branches, and a membership exceeding 1,800,000. As may be seen from the following table, the greater part of the trade unions is concentrated in the mining, engineering, building, and textile trades; these four groups embracing nearly 70 per cent. of all the organized workers in Great Britain.

GREAT BRITAIN—TRADE UNIONS IN 1899.			MEMBERSHIP.	
	Number of unions.	Number of branches.	Number.	Per cent.
Mining and Quarrying.....	60	2,089	494,763	24
Metal, Engineering and Shipbuilding.....	272	2,570	331,245	19
Building.....	136	3,202	251,085	14
Textile.....	242	591	220,098	12
Railway, Dock and other Transport.....	68	1,299	162,283	9
General Labor.....	31	900	111,716	6
Clothing.....	47	615	68,309	4
Printing and Bookbinding.....	53	358	56,471	3
Public Employment.....	32	908	41,119	2
Woodworking and Furnishing.....	193	618	39,852	2
All other unions.....	238	1,541	95,077	5
Total.....	1,292	14,540	1,800,518	100

The above figures indicate an increase of 299,286 members, or nearly 20 per cent. since 1892. The total number of female trade unionists in 1899 was 120,448, or 7 per cent. of the total trade-union membership, and 39 per cent. of the membership of those unions which include women. The British trade unions are represented in two central organizations: the General Federation of Trade Unions and the British Trade Union Congress. Of the two the former is of very recent formation, having been started in 1899. Although it has been in existence only a year, it is no longer an experiment. At the time of its organization it consisted of 44 unions, with a membership of 343,000, or more than one-fifth of the total trade-union membership of the country.

United States.—For a partial account of the trade unions in the United States, see article *FEDERATION OF LABOR, AMERICAN*.

New York.—From the report of the Bureau of Labor Statistics it appeared that there were 245,332 organized workmen in that State at the close of September, 1900. Only 37 per cent. of these men were to be found in "inland cities and towns," the rest—i.e., nearly two-thirds of all the trade unionists—belonging to New York City. The following table shows the distribution of the membership by trades:

MEMBERSHIP OF LABOR ORGANIZATIONS.

GROUPS OF TRADES.	End of Sept., 1899.	End of Dec., 1899.	End of March, 1900.	End of June, 1900.	End of Sept., 1900.	Increase in 12 months.
I. Building, stoneworking...	70,942	78,429	74,888	77,844	80,461	9,519
II. Clothing and textiles.....	29,708	33,666	32,037	31,274	28,766	—936
III. Metals, machinery, etc.....	24,014	27,992	31,135	33,051	31,261	7,247
IV. Transportation.....	24,373	25,211	27,429	30,456	30,096	5,723
V. Printing.....	16,023	16,040	16,534	16,963	17,117	1,094
VI. Tobacco.....	8,886	8,978	9,723	11,850	12,349	3,463
VII. Food and liquors.....	8,391	8,757	8,678	9,706	9,430	1,039
VIII. Theaters, music.....	9,518	9,494	9,627	9,536	9,698	180
IX. Woodworking.....	6,991	7,913	8,468	9,117	8,719	1,721
X. Restaurants, retail trade....	3,207	3,781	4,306	5,719	5,406	2,829
XI. Public employment.....	3,727	5,847	6,423	7,230	7,114	3,887
XII. Miscellaneous.....	3,247	3,275	3,885	5,193	4,838	1,566
Total.....	209,020	224,383	232,533	247,552	245,332	26,312

From the following table it will be seen that New York has been gaining on the rest of the State in the proportion of trade-union membership during the last two years, which bears out the results of general observation that the larger the city, the greater the opportunities of organization enjoyed by labor.

AT THE END OF—	MEMBERSHIP OF LABOR UNIONS IN—			Membership in inland towns as a percentage of the aggregate.
	New York City.	Inland towns and cities.	The State.	
December, 1898.....	124,863	49,888	174,751	28.5
March, 1899.....	122,993	50,523	173,516	29.1
June, 1899.....	130,684	57,771	188,455	30.7
September, 1899.....	141,687	67,333	209,020	32.2
December, 1899.....	152,860	71,523	224,383	31.9
March, 1900.....	153,129	79,404	232,533	34.1
June, 1900.....	153,337	94,215	247,552	38.1
September, 1900.....	154,494	90,838	245,332	37.0

TRAILL, HENRY DUFF, D.C.L., editor of *Literature*, died in London, February 21, 1900. Born at Blackheath, England, August 14, 1842, he was educated at the Merchant Taylors' School, London, and St. John's College, Oxford. In 1869 he was called to the bar of the Inner Temple, and during the following year and 1871 was inspector of returns under the Education act. In 1873 he joined the staff of the *Pall Mall Gazette*, and later was connected with the *St. James's Gazette*, *Daily Telegraph*, the *Saturday Review*, and also the *Observer*. He was editor of *Social England* and of *Literature*. His collected writings include: *Central Government* (English Citizen Series) (1881); *Sterne and Coleridge* (English Men of Letters Series) (1882 and 1884 respectively); *Recaptured Rhymes* (1882); *The New Lucian* (1884); *Shaftesbury* (English Worthies Series) (1886); *William III.* (Twelve English Statesmen) (1888); *Strafford* (English Men of Action Series) (1889); *Saturday Songs* (1890); *Lord Salisbury* (The Queen's Prime Ministers) (1891); *Number Twenty* (1892); *The Life of Sir John Franklin* (1896); *From Cairo to the Soudan Frontier* (1896); *Lord Cromer* (1897); *The New Fiction and Other Essays on Literary Subjects* (1897).

TRANS-ANDEAN RAILWAY. See CHILE (paragraph Communications).

TRANS-SAHARAN RAILWAY. See AFRICA (paragraph French Possessions).

TRANS-SIBERIAN RAILWAY. In May, 1900, the Trans-Siberian Railway, which has been under construction since 1891, was opened to traffic from Chelyabinsk, on the European frontier of Russia, to Vladivostok on the Pacific Ocean. The magnitude of this line as an engineering work, the important rôle which it is expected to play in the world's commerce, and the opening which it has afforded for Russian activities in China and the far east, make it an enterprise of exceptional interest, and a brief historical account of the conditions which brought it into existence and controlled its construction may well be included in a record of the notable events of 1900.

Siberia has formed a part of the Russian Empire practically since the end of the sixteenth century, and the Peking treaty of 1860 recognized definitely Russia's possession of the whole Amur region and a port was opened upon the Sea of Japan. About this time the abolition of serfdom in Russia caused a strong tide of emigration to flow toward Siberia, and the resulting increase in population induced the Emperor Alexander II. to study various schemes for giving greater value to his immense Asiatic possessions. The most important of these schemes was the building of the Trans-Siberian Railway. Work was actually commenced at Vladivostok on the Pacific in 1891 and at Chelyabinsk, near the European frontier, in 1892. As originally planned this line was divided into six sections as follows: Western Siberia, Chelyabinsk to Ob, 878 miles; Central Siberia, Ob to Irkutsk, 1134 miles; Circum-Baikal, Irkutsk to Mysovaya, 198 miles; Trans-Baikal, Mysovaya to Sryetensk, 685 miles; Amur Section, Sryetensk to Khabarovsk, 1373 miles; Usuri Section, Khabarovsk to Vladivostok, 474 miles.

The Circum-Baikal line has not yet been built and the Amur River division has been replaced by another location, but all the other divisions are actually in operation as originally planned. The change in the eastern division was brought about by the fact that the Amur River line was difficult of construction and costly; and especially because the treaty of 1896, negotiated between the Chinese government and the Russian-Chinese Bank, opened up to Russia a much more advantageous route to Vladivostok. This Manchurian line is 952 miles long from Nagadan, where it leaves the original location, to Vladivostok, and not including the South Manchurian branch leading to Port Arthur. By the new route the total distance from Chelyabinsk to Vladivostok has been reduced to 3961 miles or 4238 miles to Port Arthur. Of this total, 2666 miles are now in operation. If we add to the Trans-Siberian Railway proper its two Chinese lines, now under construction, the aggregate length of the system is about 4710 miles and includes over 2300 structures in stone or iron. At the present time it requires about 25 days to travel from Paris to Vladivostok, including the trip by transfer steamer across Lake Baikal. The rails now used weigh 40.8 pounds per yard, and the condition of the roadbed is such that a speed exceeding 16.5 miles per hour is not practicable. It is expected that by 1905, however, this roadbed will be so improved that the running time can be reduced one-half.

Over the larger part of the Western Siberian Division the cultivation of cereals is highly developed, especially in the rich districts about Tobolsk, and the raising of cattle is conducted on an enormous scale. The country itself presents a succession of great plains broken by scattered clumps of young trees, with birch trees predominating. There are also many lakes of brackish or sulphurous water; and it is interesting to note that by some geological phenomenon still unexplained, the water in these lakes, although they are often close together, assumes different levels and that some of the lakes will disappear suddenly to reappear after the lapse of several years. While the soil of the region is rich, the subsoil, made up entirely of deposits of a recent formation, is devoid of all interest from a mineralogical point of view, at least in the vicinity of the railway line. For all masonry the necessary cut stone and cement had to be brought from a distance. In the Altai Mountains, however, gold, iron, argentiferous lead, copper, and coal are abundant, especially in the mining district of Semipalatinsk, where the output already demands the construction of a branch railway. The country is so flat that the grades of the railway are very light, and the maximum earthwork amounted to about 23,300 cubic yards per mile and was executed at an average cost of ten cents per cubic yard. Upon this Western Siberian division there are 274 bridges, the most important of which are the four iron bridges crossing the Tobol, Ishim, Irtysh and Ob rivers. As the lake water is usually brackish and unfit for boiler use, seven artesian well stations have been established along the division, and the water thus obtained is chemically purified. In connection with the railway work of this division, extensive drainage operations have been commenced which will eventually reclaim and give value to some 11,000,000 acres of the marshy land near

Kainsk. On January 1, 1900, about 875,000 acres had been reclaimed by the construction of 430 miles of canals and the sinking of more than 1000 wells.

In 1898 the Western Siberian Railway carried to the commercial centres of Russia and Europe 393,120 metric tons of merchandise, 280,407 metric tons of grain, and 112,713 metric tons of food products and raw materials. Between 1896 and 1898 over 280,000 emigrants settled upon lands sold to them by the state under most favorable terms. Each male emigrant receives 40 acres, is released from import duties for three years, and he can delay payment for the land for three years after his return from military duty. Upon their arrival these emigrants are received in roomy government barracks which are supplied with restaurants and hospitals with gratuitous medical care. These accommodations are under the control of the Department of Emigration. In this manner nearly 13,750,000 acres of good state land have been distributed to emigrants from 1893-99, principally in the governments of Tomsk, Tobolsk and in Akmolinsk, where the climate approaches nearly to that of Central Russia. The Central Siberian division of the Trans-Siberian Railway traverses a section of the country which is largely mountainous and wooded, and as a consequence 982 bridges of various types, including structures of wood, iron and masonry, had to be constructed. The largest of these bridges, that over the Yenisei, is 853.42 metres (2800 feet) long and consists of six spans. Owing to the rigor of the climate, the larger part of the masonry in the piers and abutments of these bridges had to be built in the winter inside of shelter barracks, which could be heated. The greatest difficulty met with in building this division was undoubtedly the "taiga," or almost impenetrable virgin forest which rested upon a marshy bed about 2.3 feet thick, covered with a strong grass. Here a wooden railway was first laid down, and then the soil was drained by a series of ditches. Work in these humid forests was very trying upon the men, for they often extended in unbroken stretches of from 27 to 46 miles. Upon this division the grades are heavy in places and the earthwork averaged about 32,200 cubic yards per mile; it was executed at an average cost of 16.5 cents per cubic yard. This division traverses an excellent mining country. The high mountains capped by eternal snow are thickly covered with virgin forests of great pines and other trees, and the valleys are more or less adapted to the cultivation of cereals, which are largely shipped to Eastern Siberia. In this region the Altai Mountains, called by the Chinese the Mountains of Gold, rise to a mean height of 5000 feet above sea level, with the culminating peak of Byelukha attaining a height of nearly 12,000 feet. The Tomsk region has been exploited for its mineral wealth since 1726 and is one of the most important mineral centres of the Russian Empire. The last official report gives the annual gold product at 7530 pounds, and in 124 placer workings of the Altai region, the value of the sand ranges from 0.54 to 0.8 grammes of gold per metric ton. Silver, lead and copper are found in 800 mines in the same district. Iron ore is abundant in different parts of Tomsk, and jasper, porphyry, agate, marble and breccia are mined in the Bysk district. The coal field of Kuznetsk has a total length of more than 248 miles and a width of about 62 miles, and is remarkable for the thickness of its seams. It is said that the coal deposits of Sujensk are equally worthy of remark for the mass of coal and the excellence of its quality. Chlorate of sodium and Glauber salts are also extracted in great quantities from the lakes in the Barnaul region. Graphite is found in great abundance in the government of Yeniseisk, this mineral being equal in quality to that of Cumberland and Ceylon. The graphite used in the Faber pencils has been taken from the Irkutsk district for a long time. There are also indications of petroleum on the River Angara, 26 miles from Irkutsk. The Central Siberian Railway in 1898 carried to Europe and parts of eastern Siberia a total of 254,560 metric tons of merchandise, including 54,000 tons of grain sent eastward. In the same year 50,000 emigrants came into this region.

The Circum-Baikal Division of the main line is yet to be built; but communication is maintained between the constructed lines by the establishment of a transfer steamer service across Lake Baikal; the length of this water transport being 41.5 miles. This ice-breaking steamer will carry 25 cars, with their freight and passengers, and during the month of February, 1900, it maintained a speed of from $3\frac{1}{2}$ to $6\frac{1}{2}$ miles per hour through ice 2.8 feet thick, on which was 8 inches of congealed snow transformed into ice. Another ice-breaker has since been built for the transport of passengers only, and a floating dock has been constructed for the repair of the two vessels. The Trans-Baikal Division was commenced on April 23, 1895, and was completed on May 1, 1900. Of this line about 85 per cent. was constructed in a rocky soil, upon which dynamite alone had effect. The cold was excessive, the temperature reaching at times 58° Fahrenheit below zero, in the mountains. The larger part of the construction was done by state prisoners. At a point 239 miles from the western end of this division there is a branch line from Kaidalovo to the Chinese frontier, 214.5 miles long. This branch line, resulting from

the abandonment of the Amur River Division, is intended to connect later with the Manchurian line at Nagadan. Work was commenced in the summer of 1900, and will, it is expected, be finished in 1902 along with the Manchurian railway proper and the branch to Port Arthur. The rail adopted for this branch is heavier than that employed on the main line; weighing about 55 pounds per yard. For this reason better train speeds can be maintained. Upon this branch there are 48 masonry culverts, 103 wooden bridges and 50 iron bridges. The Trans-Baikal region of Siberia is cut by the mountains of Yablonovoi, running southwest and northwest and reaching a height of 8200 feet above sea level. This country is very rich in minerals, especially coal, although little actual mining has been done. Gold is found in placer deposits which have been worked for over a century. Argentiferous lead mines near Nerchinsk have been worked by the government of Russia since 1763, and copper is found in the basins of the Onon and Arguñ rivers.

The Khabarovsk-Vladivostok section unites Khabarovsk, on the Amur River, with Vladivostok on the Pacific Ocean. This line is 473.6 miles long and has upon it 510 culverts, bridges, etc. Construction was begun on May 19, 1891, by the Emperor Nicholas II., when he was Grand Duke, and the line was opened for traffic on February 1, 1896. This railway, a part of the original location of the Trans-Siberian line, traverses an inhospitable and thinly settled country that has not yet been thoroughly explored for mineral matter, although coal, iron, lead and copper have been found to some extent. Between 1893 and 1899 about 25,000 emigrants settled in the Usuri district under special inducements. Since the inauguration of the Trans-Siberian Railway about 996,000 Russians have emigrated to all Siberia, or an average of 142,000 emigrants per year. Altogether in the nine years from 1891 to 1900, there have been built 3348 miles of railway, or an average of about 372 miles a year, at a total cost of about \$200,000,000.

TRANSVAAL, THE, officially known up to October 25, 1900, as the South African Republic, and now the Vaal River Colony, is situated on a lofty plateau in the interior of South Africa, between the Limpopo and the Vaal rivers. It is bounded on the north by Matabeleland, on the east by Portuguese East Africa and Tongaland, on the south by Natal and the Orange River Colony, on the west by British Bechuanaland and the Kalihari Desert. The area of the colony is 119,139 square miles, and the population, according to an estimate made in 1898, is 1,094,156. Of this number, 748,759 were natives and 345,397 were whites. Of the whites, about 70 per cent. before the war were Uitlanders; and of the Uitlanders, about 80 per cent. were English. On the outbreak of the war large numbers of the Uitlanders left the country, fleeing for refuge to Cape Colony and Natal. Johannesburg, the principal city and great mining centre, which had in the beginning of 1899 an estimated population of 106,000, of whom 60,000 were white, was almost deserted in the beginning of 1900. Pretoria, the capital, has a population of 12,500, of whom 10,000 are whites. The Boers are almost wholly devoted to agriculture and stock raising, although the natural produce of the land is not sufficient for the wants of the people. Gold is the great mineral product of the Transvaal, discovered about 1885 in the Witwatersrand Hills, and is mined in greater quantities there than anywhere else in the world. In 1897 the gold output of the Transvaal was worth \$56,162,743; in 1898 the annual product was 4,555,000 ounces, valued at £16,044,135 (\$78,215,163), while that of the United States was worth about \$64,300,000. The world's production in 1898 was valued at \$286,803,462, so that the Transvaal furnished more than one-fourth of the year's total supply. In 1899 production was largely interfered with by the war. The yield for 11 months in 1899 was estimated at \$71,576,024, a decrease of \$2,119,481 from the corresponding period in 1898. The number of men employed in the mines in 1898, according to a United States consular report, was 92,806, of whom about 13,000 were whites, the rest natives. In 1900 the whites had almost all ceased work, and the only mining carried on was done by the government, which employed Cape "boys" to dig ore for the mint at Pretoria and to pay for supplies in Europe. Much harm was done through the Kaffirs' ignorance of the use of machinery. Upon the occupation of Johannesburg and Pretoria by the British, efforts were made to revive the mining industry. In September operations began to be resumed on a considerable scale, though it was not before 1901 that production was expected to be in full swing.

Diamonds are found in the Transvaal in the neighborhood of Pretoria and Rietfontein. The value of the output in 1898 was \$212,812. There are a few other minerals, including large iron deposits as yet unworked. About 1,950,000 tons of coal were mined in 1898, and were mostly consumed by the mines. The principal exports of the country are gold, wool, cattle, hides, grain, ostrich feathers, ivory, and minerals; the chief imports are machinery, animals, textiles, hardware, flour and grain, timber, leather goods, and railroad materials. Of the imports, which in 1898 amounted to \$51,835,344, about 60 per cent. came from Europe through the ports of Cape Colony, Natal and Lourenço Marques, about 12 per cent. from Cape

Orange Free State. Capital, Bloemfontein. Area, 48,326 square miles. Population, 1590, 207,563.

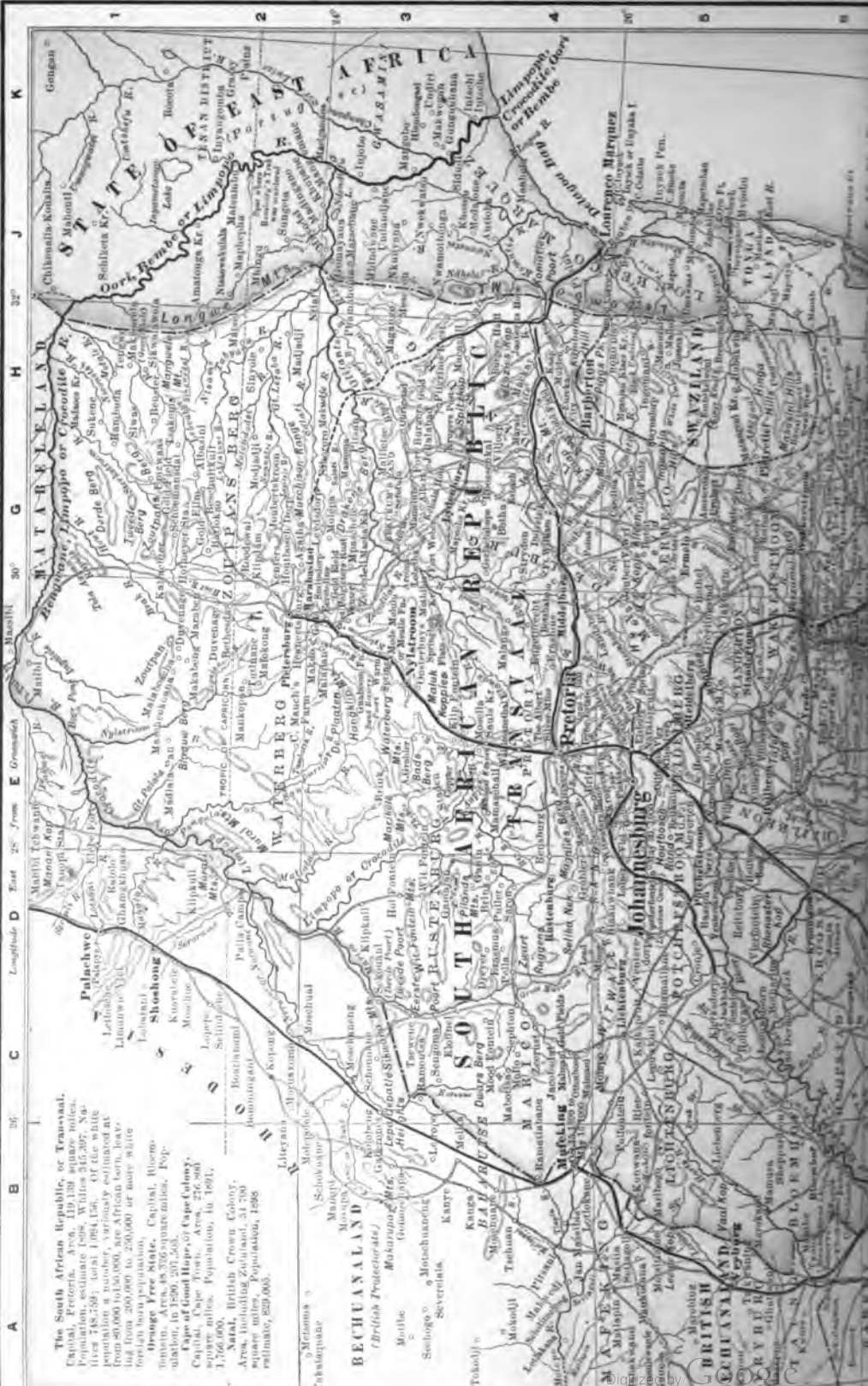
Cape of Good Hope, or Cape Colony. Capital, Cape Town. Area, 276,800 square miles. Population, in 1891, 66,000.

Natal, British Crown Colony. Area, including Zululand, 31,700 square miles. Population, 1898 (estimate), 829,005.

The map shows Echuanaaland as a central region. To its north is Molepolole, to its east is Kolobeng, and to its south is Maseru. To the west, it borders the Orange River. Further west, the map shows the towns of Maseru, Maseru, and Maseru. The map also shows the Orange River and the Orange River.

A detailed map of the Kanyo region in the Bahr-Nil drainage. The map shows the Kanyo, Kanga, and Mochumbe rivers flowing into the Bahr-Nil. Key locations marked include Mokodji, Severina, Mottche, Goumou, Lorov, Mellu, Mabed, Dud, Kotane, and Hei ph. A scale bar at the bottom indicates 100 miles.

A detailed map of the Maelung area in Taiwan. The map shows the Maelung River flowing through the center, with the Maelung Bridge crossing it. To the north is the Maelung area, and to the south is the Maelung area. The map includes labels for various roads, landmarks, and geographical features. The map is oriented with North at the top.

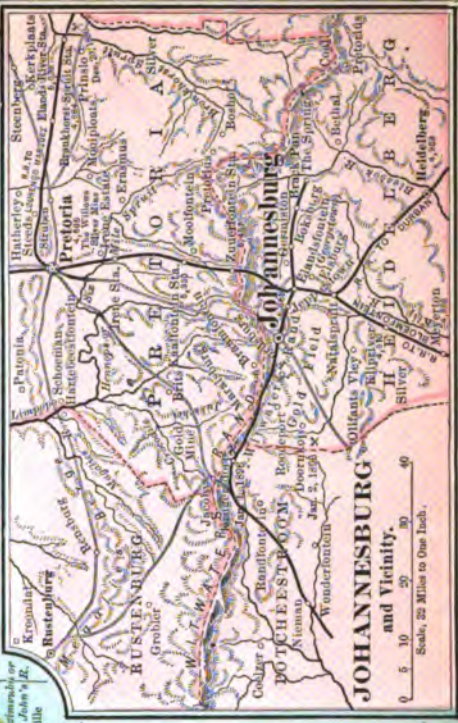




THE FORMER BOER REPUBLICS AND THEIR SURROUNDINGS.

COMPILED, DRAWN AND ENGRAVED
BY THE MATTHEWS-NORTHROP CO., IN BUFFALO.

SCALE OF STATUTE MILES.
0 10 20 30 40 50 60 70 80 90 100
25 MILES TO THE INCH.



Copyright, 1901, by the MATTHEWS-NORTHROP CO., BUFFALO, N. Y.
Longitude D East 25° from E Greenwich
24° A B 26° C 30° F 32° H 34° K 36° L

Colony, the rest from the Orange Free State, Natal, and Portuguese East Africa. During the course of the war communication with the outside world was cut off in every direction, except Lourenço Marques, and commerce naturally came almost to a standstill, the only imports being flour and other necessities of life for the armies in the fields. The economic condition of the Transvaal, as well as of the Orange Free State, is described in a report of Consul-General Stowe, dated August 17, 1900, and published in the United States Consular Reports. A very limited portion of the Boer state was cultivated, and even there the crops were left uncut. Fences were down all over the country, the posts having been burned for fuel. Railroad bridges and culverts were destroyed with very few exceptions. Business there was very little. In Pretoria and Johannesburg banks were open, but almost no transactions were carried on. On the other hand, the prospects for trade after the cessation of hostilities were excellent. In the African ports great stores of merchandise were being massed for a sudden invasion of the Transvaal; agents were busily examining conditions and placing large orders with European and American firms. The resumption of mining was sure to be followed by brisk trading, and the necessity of rebuilding railways and bridges offered a market for American timber and machinery. The imperial government commenced the building of a railroad from Pretoria through Johannesburg to the Orange River Colony frontier. Plans for a new line from Harrismith, in Cape Colony, to the Orange River Railway were formulated with the intention of competing with the Netherlands Railway Company, which monopolizes traffic and makes profits of 200 per cent.

The railways of the Transvaal comprise a trunk line, running from Pietersburg in the north through Pretoria and Johannesburg to Bloemfontein and the south; a branch running from Pretoria east to Lourenço Marques; a branch running south-east from Oliphant's Nek through the tunnel at Laing's Nek, a pass in the Drakenburg Mountains into Natal, passing through Ladysmith and Pietermaritzburg and terminating at Durban; a branch running southwest from Johannesburg to Krugersdorp and Pochefstroom. The total mileage in September, 1898, was 774, with 270 miles under construction and 252 miles projected. The financial condition of the government was immensely improved by the discovery of gold and the consequent development of the country. In 1882 the revenue was £177,407; in 1898, £3,983,560. The expenditures in 1898 were £3,971,473. The public debt on December 31, 1898, was £2,660,349. The government holds a considerable amount of property, including the Barberton gold fields. The South African Republic had no standing army, excepting an artillery force of 400 men. All able-bodied citizens were liable to military service in case of necessity. In February, 1900, the strength of the Boer Transvaal was estimated at 29,279 men. The number of combatants may have been greater during the war, because the Boers were joined by Cape and Natal Dutch and foreigners to the number of 10,000. The artillerymen of the two republics were estimated at 800 men. The number of guns in the field was estimated in February, 1900, at 110. Before its annexation to the British empire the Transvaal was a republic under a constitution framed in 1849 and modified many times before 1897. The legislative power was vested in two bodies of 27 members each, known as First and Second *Volksraad*. Members of the upper house were elected by burghers of the first class—that is, white men resident in the Transvaal before 1876 or veterans of wars of the republic. The lower house was elected by burghers of the first and second class, the latter comprising naturalized citizens. The president and commandant-general were elected by the first-class burghers. The president in 1900 was S. J. P. Kruger (*q.v.*).

HISTORY.

Summary.—On October 11, 1899, the South African Republic declared war against Great Britain, and immediately the troops of the Transvaal and of the Orange Free State entered the Cape Colony and Natal. Laing's Nek and Ingogo Heights, commanding the line of communications between Natal and the Transvaal, were seized by the Boers, who pressed down the Durban Railway and threw themselves against the British line extending from Ladysmith to Dundee. At Glencoe on October 20 and the following day at Elandslaagte the English were victorious, but at Nicholson's Nek on October 30 they met disaster. One hundred and fifty of their men were killed and 900 were taken prisoners. The Boers pressed southward, swept around Ladysmith, and on November 2 completely invested the town, with 9000 troops under General White pent up within. On the western border of the Free State, Kimberley was besieged by a large army under General Cronje. Two hundred and fifty miles to the north Colonel Baden-Powell with 2000 white men was locked up in Mafeking by General Snyman. Almost all the British forces in South Africa were thus in the course of three weeks helplessly imprisoned with the enemy strongly intrenched on British territory. On November 1 General Buller, commander of the British forces in South Africa, arrived at Cape Town. He had

set out from London with a definite plan. Three armies, landed at Cape Town, Port Elizabeth, and East London, were to have advanced north along the three lines of railway, crossed the Orange River, and converged on Bloemfontein and Pretoria, conquering a peace. But the situation in Natal caused a change of operations. The British troops were disembarked at Durban, instead of Cape Town, and the relief of Ladysmith was made the immediate object of the campaign. Lord Methuen with 8000 men was to force his way into Kimberley, while General Gatacre was sent to operate against the Boers in the north of the colony. The plan failed completely. Methuen drove the Boers before him at Belmont on November 23 and at Enslin, or Graspan, on November 25; but three days later his attempt to cross the Modder River was met by a withering fire, and he was forced to retreat with heavy loss to the southern bank. There he remained inactive till the second week of December, when he advanced on Cronje, strongly intrenched at Magersfontein, and was driven back over the Modder with the loss of 1000 men, the Highland Brigade being practically wiped out by the rifle fire from Boer trenches. On December 10 General Gatacre at Stormberg Junction, in Cape Colony, attempted to storm the enemy's position in the night. Depending on a single scout, he found himself at daybreak in close formation unawares before the Boers' impregnable intrenchments. He retired with the loss of 725 men. In Natal General Buller advanced to the relief of Ladysmith. At Colenso, south of Ladysmith, the Boers were posted in force. To drive them out, Buller on December 15 ordered two divisions under Hart and Hildyard to cross the Tugela. Hart's division was thrown back. Hildyard's division was preparing to cross when the artillery under Colonel Long, eager to support the movement, ran up too close to the bank and fell into a Boer ambush. Ten guns were left in the hands of the enemy, and Hildyard's unsupported brigades were driven back. The battle cost the English 1150 men. The year 1899 closed, then, with three British forces still cooped up at Ladysmith, Kimberley, and Mafeking, with three British armies defeated and checked, in Natal, on the Tugela, twenty-five miles south of Ladysmith; on the Modder River, twenty-five miles south of Kimberley, and at Molteno, sixty miles in the heart of Cape Colony.

The Lesson of Defeat.—The close succession of disasters awoke Great Britain (*q.v.*) to the real magnitude of her task in South Africa. The strength of the Boers and their fighting qualities had been underestimated. As it turned out during the first three months of the war, every chance of victory was with the Boers and against the English. In the first place, the Boers acted on the defensive; though they had invaded British territory, they contented themselves with throwing up intrenchments and waiting for attack; and, acting on the defensive, their small commandos were able to cope successfully with armies largely outnumbering them. The Boers' style of fighting was adapted to the nature of the country. They never acted in close formation, but fought in their straggling skirmish lines, hidden behind boulders and bushes, and extending over miles of country. Their shooting was far better than that of the English, and they were provided with the latest rifles and smokeless powder. Their artillery was more than a match for the British cannon; they handled heavy guns skilfully, while they showed themselves masters in the use of light quick-firing machines, with which they were well provided. The British, on the other hand, were badly organized; adequate transport service was almost entirely wanting, and the armies were of necessity tied to the lines of railways and limited to a narrow field of action. The British officers did not know the country. Repeatedly they found themselves unawares on the enemy, and allowed themselves to be taken by surprise, Magersfontein and Stormberg being costly evidence on the point. They attacked in too close formation and provided excellent targets for the Boer rifles. Summed up in one statement, the great advantage of the Boers was their mobility; the great disadvantage of the British was their lack of mobility. Provided each man with a hardy pony, the Boers were both infantry and cavalry at the same time. They would dismount and throw up intrenchments, fight behind them skilfully, and then retreat with impunity. They could not be pursued or outflanked, because, as their enemies confessed, they could make ten miles to the British two. The British, on the contrary, were handicapped by the practical absence of cavalry, a circumstance which accentuated the difference in quickness of operation between the two armies.

Great Preparations.—Buller was defeated on December 15. On December 18 Lord Roberts of Kandahar was ordered to Africa as commander-in-chief with Lord Kitchener of Khartoum as his chief-of-staff. The remainder of the reserves were called out, the Seventh Division was ordered to the Cape, and the Eighth Division was mobilized. Militia regiments offered themselves for work in South Africa, and were accepted. Volunteer *corps* were raised throughout the country, and the City of London Imperial Volunteers went to the front, splendidly equipped with artillery. Out of the Yeomanry battalions were selected and dispatched to the field. From

Australia, India, and Canada came new offers of men and contingents of mounted troops, destined to be of great use to the British forces. In all over one hundred thousand men were embarked for South Africa, and it was estimated that by the end of January the English there numbered 250,000. While the new commanders and reinforcements were on the sea fighting was going on in Cape Colony and Natal. On January 1, 1900, General French, the only undefeated general officer among the British, took Colesberg by a skilful cavalry manoeuvre and drove the Boers northward to the Orange River; but on January 6 a part of his command, the Suffolk Regiment, under Colonel Watson, in attacking a Boer kopje, was repulsed with heavy loss in killed, wounded, and prisoners. In the neighborhood of the Modder River Colonel Pilcher on January 1 raided from Belmont to Sunnyside, a town twenty-five miles to the northwest, captured a Boer laager and some forty prisoners; but on the same day the Boers took the town of Kuruwan, in Bechuanaland, with the garrison of 120 men. On January 6 the besieging force around Ladysmith made a fierce assault on the southern defences of the town. The fighting was desperate and hand-to-hand. The British posts were thrice taken and retaken, but finally the Boers were compelled to retreat with the loss of over 500 men, though the British lost nearly that number themselves. During the assault Buller had ordered an attack on Colenso, to divert the Boers from Ladysmith, but no change was effected in the situation, and the British headquarters remained at Chieveley some eight miles to the south of Colenso.

The Tugela and Spion Kop.—North of the Tugela the Boer intrenchments extended, it was reckoned, for seventeen miles along ridges and kopjes parallel with the bank of the river. Buller, intent upon relieving Ladysmith, once more prepared to cross the stream. He determined on a great flanking movement toward the west, along the Tugela. On January 11 the troops were put into motion, and General Warren's troops seized a bridge at Potgieter's Drift, fifteen miles west of Colenso. Here General Lyttleton's brigade crossed on January 17, while Warren moved six miles to the west and crossed under fire at Trechard's Drift. From the 17th to the 20th Warren, Clery, and Dundonald pressed westward, driving the Boers from kopjes with small loss to themselves, and swinging upon Ladysmith from a south-westerly direction. But it was found that the length of the Boer intrenchments had been underestimated, that they were nearer thirty miles long than fifteen, and extended on the west to Acton Homes. To have attempted a flanking movement over such a distance would have thinned the British line of attack and put it in danger of being cut in two. Warren, therefore, determined to deliver a direct attack upon Spion Kop, a steep hill just north of the Tugela, mistakenly supposed by the British to be the key of the Boer position. The assault on the kop began on January 20. On January 23 Warren's troops, under a murderous rifle fire, crossed a glacia three-quarters of a mile broad and charged five hundred feet up a slope so steep that artillery could not be dragged up. The Boers were driven from the position, and the British encamped during the night of January 23-24 on the top of the hill. Spion Kop turned out a death-trap. The hill descended abruptly to the south only; in other directions it sloped gently, and could easily be invested by superior Boer forces from three sides. It turned out that the hill was commanded by other kopjes in possession of the Boers, and that its circumference was so large that it could not be held by the small force on top. All night, then, the English lay helpless on Spion Kop without artillery, without food, without water, while Boer cannon from surrounding hills played upon them and Boer marksmen picked them off with rifles. During the night, Colonel Thorneycroft took the place of Woodgate in command on the hill and ordered a retreat. The British descended Spion Kop, leaving, according to Boer reports, 1500 dead and 150 prisoners. On January 27 Warren recrossed the Tugela. The great flanking movement had failed, and Buller's forces were once more at Chieveley, south of Colenso. The effect of the Spion Kop disaster was only to make Great Britain more determined than ever. Buller in Natal and the relief of Ladysmith had become by this time a part only of a general plan of campaign which the new commander-in-chief was to inaugurate.

The New Plan of Campaign.—Roberts and Kitchener arrived at Cape Town on January 10. On February 9 Roberts came into Methuen's camp on the Modder River. Reinforcements had, in the meantime, poured into Cape Town, and Kitchener, the greatest organizer in the British army, had moulded them into four armies. The transport and train were established on a perfect working basis. The cavalry branch had been increased and the mounted infantry made an important arm of the service. A new plan of campaign had been adopted, which in substance was this: Lord Roberts with the main body of troops was to set out from the neighborhood of Kimberley as a base, break into the Orange Free State, and march on Bloemfontein and Pretoria. In Cape Colony three armies under Generals Clements, Gatacre, and Brabant were to advance to the Orange River, driving the Boer commandos before them and converging on Bloemfontein. The Boers, thus crowded

up in the northern part of the Orange Free State, were to be pushed northward across the Vaal beyond Pretoria and cooped up in the mountains of eastern Transvaal, where the united armies of England could easily crush them. Ladysmith was to be left to Buller for the present, Roberts conjecturing that an advance on Bloemfontein and Pretoria would serve to raise the siege of that town. During the month of January, Roberts had sent French and his cavalry *corps* from Cape Colony to the neighborhood of the Modder River camp, twenty miles south of Kimberley. One hundred and fifty new guns were to make the British artillery superior to that of the Boers, and the other advantages the Boers possessed were to be counterbalanced by the enormous preponderance of British troops.

The Boers, in the meanwhile, were active in Cape Colony, south of the Orange River. At Rensburg, south of Colesburg, on the railway from Port Elizabeth, they threatened to cut the British line of communication. From January 9 to January 13 they pressed the British back to Arundel and endangered Naauwpoort and De Aar, important junctions on the railways from Port Elizabeth and Cape Town. In expectation of a move on Kimberley, Cronje's forces at Magersfontein were being strengthened.

Invasion of Orange Free State.—Lord Roberts's plan of invasion comprised the crossing of the Modder River in the rear of Cronje's army, the cutting of Cronje's communications with Bloemfontein, and the consequent relief of Kimberley. The British forces consisted of about 40,000 infantry, 7000 cavalry, and 150 guns. Cronje's army amounted to 10,000 men. On February 12 General French dashed across the Riet River at De Kiel's and Waterman's drifts, fifteen miles east of the British camp, and swept on to the Modder River, capturing five Boer laagers on the way. On the 13th he forced the passage of the Modder at Klip and Rondeval drifts. With Kelly-Kenny and Gordon he entered Jacobsdal on the 15th. On the 16th French entered Kimberley, relieving the town after a siege of 123 days. The British movements produced the desired effect. Cronje abandoned his position at Magersfontein and fled to the northeast, since the British were between him and Bloemfontein. French's cavalry and Kelly-Kenny's infantry hung on his rear and flanks during January 16 and 17. On the 18th and 19th fierce fighting occurred at Paardeberg, on the Modder River, and there, finally, Kelly-Kenny, Macdonald's Highland Brigade, and French had Cronje surrounded on all sides and brought to a standstill. Cronje intrenched himself at Koodoosrand Drift, in the bed of the Modder, in a hollow 2 miles long, 200 feet wide, and 50 feet deep. There he lay from the 19th to the 27th of the month, while 150 guns from all points dropped solid shot and lyddite shells into his camp. To escape the rain of shot that poured into the camp, his men burrowed into the banks of the river, and it was later discovered with astonishment that out of 6000 men only 200 had been killed or wounded by the furious bombardment of the British. Boer relief forces appeared in the neighborhood. On January 21 Roberts drove off the most considerable of these bands under Commandant Botha and on the 23d a commando of Natal Boers. The British, in the meanwhile, narrowed the circle around Cronje's camp. At three A.M. on January 27 the Canadian regiment, a battalion of engineers, the Gordon Highlanders, and the Second Shropshires dashed within eighty yards of the Boer lines, and at daybreak Cronje surrendered with 4000 men and 6 guns. A large number of his men had broken through the British lines during the week and had joined Joubert, who was midway between Kimberley and Bloemfontein, or the commandos of Botha, Delarey, and De Wet, who were gathered around the capital. The fall of Cronje marked the end of organized Boer victories. On the comparatively level veldt of the Free State, Roberts's superiority of numbers told irresistibly, and his march on Bloemfontein was not checked by any pitched fights. The remarkable feature of this march was the careful avoidance by Roberts of all frontal attacks. The British army swept on with the infantry in the centre and French and Ian Hamilton far in advance on the wings, outflanking the Boers repeatedly. General French with his troops covered one hundred and fifty miles of territory and killed one-third of his horses before the arrival at the capital of the Free State. On March 7 the British came on the Boers at Poplar Grove, about sixty miles west of Bloemfontein, extended for nearly fifteen miles north and south across the Modder River. Joubert was in command, and had with him Delarey and De Wet. Roberts took them in the left flank and drove them from their intrenchments. On March 10, 14,000 troops, it is said, under Delarey were overtaken and engaged by Kelly-Kenny's division at Driefontein, thirty miles west of Bloemfontein. The main army came up, and a whole day's battle followed, resulting in the usual flanking movement on the part of the British and a Boer retreat. After the fight Roberts sent a message to the Boer commanders, protesting against the abuse of the white flag and the employment of "dum-dum" bullets. Lord Roberts stated that he had personally seen Boers display the white flag, as a sign of surrender, and then fire upon the British soldiers advancing to take them prisoners. The "dum-dum" bullets were made so as to



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FOUR MEN WHO HAVE FIGURED PROMINENTLY IN SOUTH AFRICA.

1. Sir Alfred Milner. 2. Lieutenant Winston Churchill.

3. W. P. Schreiner. 4. Dr. Leyds.

flatten at the moment of impact, and caused large and jagged wounds. In reply the Boer leaders denied any abuse of the white flag, and President Steyn asserted that the "dum-dum" bullets were found in British cartridge boxes taken by the Boers after Driefontein. Lord Roberts and the British turned to the south, evading the Boer entrenchments, and met no further effectual resistance on the way to Bloemfontein, the country around the capital being little adapted to the Boer style of defence. On March 13 Lord Roberts arrived before the city. The mayor and two members of the former executive government went out to meet him, and the army entered the town peacefully. President Steyn had fled the preceding day, removing the capital to Kroonstad, one hundred and fifty miles northeast of Bloemfontein.

Mediation and Intervention.—On February 19 Lord Roberts had issued a proclamation to the burghers of the Free State, declaring that Great Britain bore no ill-will to the peaceful citizens of the state and exhorting all to desist from hostilities. Non-combatants were guaranteed safety of person and property. All requisitions were to be paid for on the spot or to be acknowledged by a receipt, constituting a claim on the government. When Steyn fled from Bloemfontein, however, General Prettyman was made military governor, and strict regulations began to be enforced. This was a consequence partly of the uncompromising attitude of the Free Staters and of a declaration of policy made by the British government on March 11. On March 5 Presidents Steyn and Kruger had sent a telegram to Lord Salisbury, requesting the cessation of hostilities. The telegram stated that the Boers had undertaken the war in self-defence, and denied all desire of undermining Great Britain's authority in South Africa; that the independence of the republics as international sovereign states was an indispensable condition of peace, and that war would continue till this was attained. On March 11 Salisbury replied that in view of the use to which the two republics had put their freedom, Great Britain was not prepared to assent to the independence either of the South African Republic or of the Orange Free State. When the direct appeal had failed, the two republics appealed to the Powers of Europe for intervention and also to the United States. (See UNITED STATES, paragraph American Offer of Mediation.) On March 13 three delegates, Messrs. Wessels, Fischer, and Wolmarans, sailed from Lourenço Marques to appeal for help in person. Arrived in Holland, they were kindly received there. The Dutch minister for foreign affairs pointed out to them, however, the hopelessness of their mission; but on their persisting put them into communication with the European courts. The attitude of the Powers was uniformly unfavorable. France and Germany, from whom most had been expected, were the least ready to help. Early in May the Boer delegates left for the United States.

Fights Around Bloemfontein.—After the occupation of Bloemfontein Lord Roberts did not take the field for nearly two months, but contented himself with sending out small brigades in all directions to pacify the Free State. The Boers, too, made no demonstrations in force; but, splitting up into small commandos, carried on a warfare of raids and ambushes around Bloemfontein, their chief aim being the capture of isolated regiments and the cutting of British lines of communication. Fighting occurred toward the end of March at Karee Siding Station, a few miles south of Brandfort and forty-five miles northeast of Bloemfontein. The Boers were driven from their position, but the British losses amounted to 200 or more. Olivier's commando of 5000 men, which had been pent up around Bloemfontein, succeeded in escaping the British cordon, took Ladybrand, on the southern border, and threatened the British communications with Cape Colony. A serious reverse to the British occurred on March 31, when Colonel Broadwood's Horse, escorting a baggage train from Thaba Nchu to the east of Bloemfontein, were ambushed by De Wet on March 31 at Korn Spruit, twenty-two miles east of the capital, and taken prisoners, involving the loss of 400 men, 7 guns, and the entire baggage. On March 27 General Joubert (*q.v.*) died at Pretoria of peritonitis; he was succeeded by General Botha in the chief command. Able general though he was, Joubert, if he had remained alive, could not probably have turned the tide of British success with all his efforts.

Fighting on the Southern Frontier.—While Lord Roberts was advancing on Bloemfontein three British columns were operating against the Boers in the north of Cape Colony. General Clements's division on the west, General Gatacre's in the centre, Brabant's Horse in the east were steadily pressing the different commandos back to the Orange River and across. Their object was to ford the river and to converge upon Bloemfontein, sweeping up the remnants that might escape from Lord Roberts's main force. On February 16 Brabant defeated the enemy at Labuschaigne's Nek; on the 18th he drove them from Dortrecht; on the 25th he occupied Jamestown. Gatacre, advancing along the line of the East London Railway, took Stormberg on March 5, Burghersdorp on the 7th, arrived at Jamestown the next day, and on March 11 occupied Aliwal North on the Orange.

The river was crossed and Bethulie to the west was reached on the 15th. In the meanwhile Clements had been operating up the Port Elizabeth Railway, had taken Rensburg on the 25th of February and Colesberg a day later. On the 15th of March, as Gatacre was rebuilding the bridge at Bethulie, Clements crossed the Orange at Norval's Pont. In the second half of March, then, the battle-grounds had been shifted entirely to the Orange Free State. The northward advance of the British continued. Clements marched through Philippolis and Fauresmith to Bloemfontein, Brabant took Rouxville, Smithfield and Wepener. Gatacre guarded the railroad at Springfontein junction. In March rebel movements had occurred among the Cape Dutch in the neighborhood of Barkley West, Prieska, and Kenhardt. Generals Kitchener and Settle quickly suppressed the insurrection, and on March 19 the rebels laid down their arms.

The Relief of Ladysmith.—On February 5 General Buller in Natal made a third attempt to break through the Boer lines on the Tugela. The river was forded at Potgieter's Drift and Schiet Drift, and Krantz Kloof on the extreme right of the Boer position at Brakfontein was taken by assault, but the height could not be held in face of the Boer fire from surrounding hills, and advance was found impossible. On February 9, therefore, the Tugela was recrossed for a third time with a loss of 410 men. On February 14 the fourth and final dash for Ladysmith began. General Buller this time attempted the left flank of the Boers. On February 14 the enemy was driven from Horsar Hill, on February 16 from Cingolo, on February 18 from Monte Cristo. On that day the Boers recrossed the Tugela. On the 19th Hlongwane was taken, and on the 20th Colenso was evacuated by the Boers and occupied by the British. On February 21 Buller crossed the Tugela and attacked the Boer position on Grobelaar Kloof, but found the place too strong, and retired across the river with loss. He returned on the 26th, crossing on a bridge two miles to the east of the former fording place. On the 27th Pieter's Hill, the key of the enemy's position, was taken by assault, and their left turned. Joubert hastily retreated, and on February 28 Lord Dundonald's cavalry entered Ladysmith. The town had been besieged for 118 days and had suffered greatly. Thirty officers and 575 men had died, 70 officers and 520 men were in the hospitals. Famine conditions prevailed among soldiers and civilians and typhoid fever raged violently. Supplies were at once rushed into the town, and railway communication re-established with the coast. The entire campaign on the Tugela had cost Buller 5500 men, of whom 2400 fell in the last ten days' fighting. Active guerilla warfare marked the month of April. The Boer commandos dashed all over the eastern half of the state, cutting and threatening lines of communication and capturing small detachments of soldiers. On April 4, 500 men of the Royal Irish Rifles were taken prisoners at Reddersburg, and his failure to come to their rescue in time caused General Gatacre's disgrace. On April 5 a small band of Boers were captured or killed on a kopje near Boshof, northeast of Kimberley. Among the dead was Colonel Villebois-Mareuil, the chief Boer strategist, to whom most of the credit for their early successes was attributed. The most important operations of the month occurred around Wepener, 55 miles southeast of Bloemfontein. In that town Botha and Olivier, with about 5000 men, by a quick dash from the north had locked up 2000 British under Colonel Dalgetty. Lord Roberts purposely delayed the sending of reinforcements till a cordon of troops should have been drawn around the besieging force and its capture assured. General Brabant came up from Aliwal North. 60 miles south of Wepener, General Rundle advanced from Reddersburg. 45 miles west, General Pole-Carew marched from Brandfort to the northwest. The trap was sprung a day too soon. On April 24 Olivier, having failed to take Wepener by assault, escaped in a northward direction, succeeded in joining the main force under Botha, and together they retreated in the direction of Ladybrand, keeping up a rear-guard fight in the neighborhood of Thaba Nchu till May 2.

From Bloemfontein to Kroonstad.—Lord Roberts with the main army rested at Bloemfontein from March 13 to May 3. The long delay aroused much criticism in England, and exasperated those that were anxious to stamp out Boer resistance within the least time. The commander-in-chief, however, waited for horses. On May 3, the main army set out, 50,000 men with 140 guns. Brandfort was occupied by the vanguard on the same day. At the Vet River, 20 miles north of Brandfort. Botha with an army of over 15,000 men held back, on May 6, the British lines for 3 hours in a fierce artillery engagement until the mounted infantry under General Hutton turned his right flank and drove him back in confusion. On May 12 the army entered Kroonstad, the new capital of the Free State. President Steyn fled to Lindley, 50 miles east of Kroonstad.

The Relief of Mafeking.—The siege of Mafeking had been commenced on October 15, 1899, by a large Boer force under General Cronje, and continued under General Snyman. Within the town were 9000 persons, of whom 2000 were white. Colonel

Baden-Powell's garrison of 1200 men was composed of a Protectorate regiment, detachments of Bechuanaland Rifles and Cape Police, the town guard, and half a battery of artillery. Large stores of provisions had been rushed into the town, and preparation for a long siege made. After several assaults had failed the Boers planted heavy siege guns on the heights and drove trenches to the suburbs of the town. Provisions began to give out in November, and as a result of bad water enteric disease broke out. On May 4, 2300 picked men under Colonel Mahon set out from Barkly West, and by forced marches made 200 miles in 12 days, joining, on May 15, Colonel Plumer's forces, 15 miles west of the town. Aware of the approach of Mahon's force, the Boers, on May 13, tried to storm the town; 250 men under Eloff, nephew of Paul Kruger, broke into the native town, but were surrounded and killed or captured. On May 17 the Boers were driven from their intrenchments, and the next day the British entered the town. It had been besieged for 123 days, and the casualties during that time ran up to about 1000.

From Kroonstad to Pretoria.—The British army advanced from Kroonstad in the form of a huge crescent 40 miles across from Ian Hamilton on the right horn to General French on the left, the main army forming the centre. On May 22 Hamilton defeated De Wet at Heilbronn and drove the Boers from the line of the Rhenoster. On May 24 the left wing crossed the Vaal, meeting no opposition. On May 27 the main army crossed the river at Vereeniging. Hunter in the meanwhile had been advancing from the neighborhood of Kimberley and had crossed the Vaal at Windsorton on May 6. Joining General Paget at Warrenton, he marched on Christiania, which he occupied on May 16. When Lord Roberts's army had forded the Vaal, Hunter was rapidly converging on Pretoria. On May 31 Johannesburg was occupied, the Boers having abandoned it. The Boer resistance around Pretoria was weak. Lord Roberts drove off Botha after a battle at Six Miles Spruit on June 4. The forts around the city were found in no condition to stand an assault, and on June 5 Pretoria surrendered, while Botha retreated to a position 15 miles east of the city. President Kruger fled and established his new capital at Machadodorp, about 130 miles east of Pretoria. The English freed 3197 prisoners kept by the Boers at Waterfall.

Guerilla Warfare in the South.—Lord Roberts's policy throughout the entire campaign was to press on against the main strength of the Boers, leaving their minor forces to be dealt with by brigades in his rear. Thus while the main army was operating against Botha north of Pretoria active fighting was going on in the Orange Free State. De Wet chiefly distinguished himself among Boer commanders. On May 28 there was severe fighting at Senekal, southeast of Kroonstad, and General Rundle lost over 200 men. On May 30 a battalion of Imperial Yeomanry was surrounded and captured at Lindley, 50 miles west of Kroonstad. On June 5 De Wet destroyed the railway and cut the telegraph line at Roodeval, north of Kroonstad, interrupting communication for several days. Two days later, at the same place, the Boers inflicted a loss of 120 men on the British. Defeated by Methuen at Heilbronn on the 11th, De Wet was again on the railway line on the 14th, and nearly succeeded in capturing Lord Kitchener, who had come down to restore communication with Pretoria. Methuen pursued him to Heilbronn on the 19th, but De Wet was back at the railway on the 24th and at Honing Spruit attacked a trainload of released prisoners. At the end of June three commandos under De Wet, Olivier, and Limmer were ranging at large throughout the Orange River Colony. In the beginning of July 35,000 men were hunting De Wet in the neighborhood of Vrede, in the extreme northeast corner of the Free State, and a line of British troops stretching from Frankfort in the north through Paardekraal, Bethlehem, and Senekal to Ficksburg seemed to coop him in securely. On July 3 the town of Vrede was taken, and on July 7 Bethlehem, an important stronghold commanding the railway through Van Reenen Pass to Ladysmith. But De Wet and Steyn, with about 2000 men and 5 guns, broke through the British cordon between Bethlehem and Ficksburg and engaged the enemy at Lindley. Defeated by Methuen at Oliphant's Nek, and pursued by Colonel Broadwood, they retreated to Vredefort in the north-western part of the colony near the Vaal. The British, nevertheless, succeeded in cornering a division of the Boers under General Prinsloo. Generals Hunter, Clements, Rundle, Bruce, Hamilton, and Macdonald drove Prinsloo into the hills south of Bethlehem, locking him up in the valley of the Little Caledon River. After much manœuvring and rapid marching Prinsloo surrendered near Naauwpoort on July 30, with about 4000 men and several guns. The blow was a serious one for the Boers. It reduced their strength south of the Vaal to the band of De Wet and that of Commandant Olivier, who, refusing to follow Prinsloo's example, broke away with about 1000 men, and ran for Harrismith, close on the Natal border, the only stronghold left them. But Harrismith was taken on August 4, and Olivier was pursued westward. From August 17 to August 20 he fought and ran and then surrendered

to General Rundle on August 26. De Wet meanwhile had been driven by Kitchener north of the Vaal and pursued to Ventersdorp. Eluding Kitchener and Methuen, he joined General Delarey at Rustenburg, 50 miles west of Pretoria.

Buller in Natal.—After Ladysmith had been relieved the British forces in Natal rested for two months before advancing north toward the Transvaal. The movement began early in May, and the towns of Helpmakaar, Dundee, and Glencoe were taken by May 15. The Boers had retreated to the extreme northern corner of Natal and had massed in force on Majuba Hill and Laing's Nek. After a three days' armistice Buller seized Van Wyk Hill and Inkwelo on June 6. On June 8 he broke through Botha's Pass in the Drakenberg Mountains. The mountains once crossed, the Boer position became untenable, and on June 11 Commandant Christian Botha evacuated Majuba Hill and Laing's Nek. Communication was restored with Pretoria, and in July Roberts's and Buller's forces were in active co-operation.

Battle About Pretoria.—General Botha with about 8000 men had entrenched himself in an impregnable position at Pienaarspoort, 15 miles east of Pretoria. On June 11 the British attacked him. The Boers slowly retreated in the direction of Middelburg, to a position about 20 miles east of Pretoria. On July 11 the Boers attacked Krugersdorp to the north of Pretoria and were repulsed, but at Nitral's Nek, 18 miles west of Pretoria, they succeeded in capturing 5 companies of the Lincoln regiment, a squadron of Scots Greys, and 2 guns. On July 16 Botha attacked General Pole-Carew east of Pretoria, but was forced to retire without result. On July 23 Lord Roberts set out from Pretoria for the final campaign.

End of Organized Boer Resistance.—The main army set out on July 23 for the eastern Transvaal. Botha fell back toward Lydenburg, in the mountainous region near the Portuguese border. In Lydenburg the Boers had collected immense stores, prepared to make the last stand there. Middelburg, more than halfway between Pretoria and Lydenburg, was taken by General French on July 28. Marching north from Natal, Buller had come through Ermelo, had occupied Twyfelaar on August 15, Van Wyk's Vlei on the 22d, and on the 24th was near Dalmanutha, to the south of Machododorp. General Pole-Carew on the same day was at Belfast, to the west; General French was ranging to the east of the town. Surrounded on three sides, the Boers, nevertheless, made a desperate stand, but were driven from Bergendal on August 28 by Buller, who occupied Machododorp the next day. Presidents Steyn and Kruger fled south to Barberton, while Botha retired northward. Buller and Ian Hamilton pursued him. On the heights of Spitzkop, southeast of Lydenburg, Botha fought the last battle of the war. He was driven from his position on September 8, and Lydenburg was occupied the next day by the main army of Buller. The Boers retreated precipitately. Effectual resistance was at an end. Many pressed for the Swaziland border, but the mass of them, 3000 in number, crossed into Portuguese territory and on September 13 surrendered to the authorities there. General French raided southward to Barberton and Avoca, and captured immense stores, 100 locomotives and other rolling stock. On September 24 General Hamilton had driven another band of Boers out of the Transvaal into Portuguese territory, and was occupying Komati Poort. September 11 President Kruger fled to Lourenço Marques, whence he sailed on October 19 for Holland by way of France on the Dutch man-of-war *Gelderland*. In the beginning of October the situation was this: A small band of Boers under Viljoen, who had succeeded Botha, was flying toward the north, pursued by Generals Hutton, Pole-Carew, and Buller; another band under De Wet was somewhere in the Orange River Colony; a third under Delarey was in the southwestern Transvaal; other Boer forces there were none. The English were all over the territory of the two dead republics. Lord Roberts was at Pretoria, instituting a government for the Transvaal; Generals Clements and Hart were at Johannesburg; General Methuen guarded the western Transvaal; General Knox held Kroonstad; General Rundle occupied Harrismith. The war then seemed practically at an end.

Revival of Guerilla Warfare.—Late in October the Boers burst into startling activity. De Wet had been discovered on October 7 and defeated after a three-days' fight near Vredefort. On October 25 he was beaten again by General Barton at Frederickstad and driven from the Vaal by General Knox at Rensburg Drift. But on November 10 he was fifty miles north of Kroonstad, where he unsuccessfully encountered the British under Butler. On November 23 De Wet and Steyn unexpectedly appeared before Dewetsdorp and captured the town, taking 400 prisoners. On December 13 General Delarey attacked General Methuen and drove him from his camp in the Magaliesburg Hills, west of Pretoria, with a loss of over 600 men. British successes came on December 23, when General French drove the Boers from the Magaliesburg Hills, and on December 28, when Lord Kitchener defeated them at Steynsburg; but the last event of the year was the taking by the Boers of Helvetia, a post on the Machododorp-Lydenburg Railway, where the British lost 250 men.



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A GROUP OF BOERS.—1. General Louis Botha. 2. General Christian De Wet.
3. Some Boer Prisoners of the better class on the British
cruiser *Penelope* in Simons Bay.

Political and Administrative.—After Bloemfontein was occupied the Orange Free State was put under military government and a mounted police created to patrol the country. On May 28 the Free State was annexed to the British empire by proclamation under the name of Orange River Colony. The burghers in arms were declared rebels, but clemency was promised to all who should abstain from acts of hostility. President Steyn replied by counter-proclamations, declaring the independence of the state and threatening those who yielded to the British. On September 1 Lord Roberts by proclamation announced the annexation of the South African Republic under the name of the Vaal River Colony. General Maxwell was appointed military governor, and early in the month a force of 12,000 men was organized into a South African constabulary and put under the command of General Baden-Powell. A policy of conciliation was instituted by Lord Roberts, but it broke down, partially in consequence of the faithlessness of the Boers. Burghers who had surrendered their arms and sworn fealty to the crown would rise on any favorable opportunity, and the army of occupation suffered from sudden attacks by bands of peaceful and subjugated farmers. In October General Maxwell was put at the head of the Transvaal administration, and amnesty was promised to all who should surrender. As soon as the leaders of the Boers had yielded it was promised that all the Boer prisoners would be released. In September operations recommenced on the Rand, and orders for supplies were being issued by mining companies. In October the British government appointed a commission to investigate the concessions that had been granted by the defunct government of the Transvaal and to report grounds for the continuance or abolition of the grants. The commission ascertained that the Netherlands Railway Company had sided actively with the Boers, supplying them with material of war and organizing parties for the destruction of the railway while in British military possession. On December 14 Sir Alfred Milner was appointed administrator of the Orange River and Vaal colonies; the country, however, was not yet ready for civil government, and General Kitchener, who had succeeded Field-Marshal Roberts on November 30 in the chief command, remained in supreme control.

Kruger in Europe.—President Kruger's visit to Europe was generally regarded as an attempt to win the intervention of the Powers in the war. The English disasters at the beginning of the war had produced unrestrained and undisguised satisfaction in Europe. The action of Great Britain with regard to Beira and Delagoa Bay (see DELAGOA BAY; PORTUGAL) intensified the feeling on the Continent. The governments, however, preserved the strictest neutrality, and expression of good will to England came from the German emperor, the czar, the chief authorities in France. All the more non-committal was the attitude of the governments when Lord Roberts's advance into the Free State turned what had seemed utter defeat for England into unexpected triumph, and when the annexation of the two republics had been effected. President Kruger, therefore failed to get assistance in France, and he was forbidden to enter Germany. Holland alone welcomed him.

What the War Cost the British.—At the beginning of the war President Kruger had said that it would cost Great Britain 10,000 men to get to Pretoria. On December 31, 1900, the war was by no means over, and the list of British killed, wounded, and prisoners amounted to 1837 officers and 25,709 men. Including those that died of disease and accident and those sent home as invalids, the British lost 2249 officers and 49,438 men. To meet such a drain, the government had recourse to extraordinary measures. Great Britain was deprived of almost its entire army, and the defence of the island left to militia and reserves. (See GREAT BRITAIN.) The expenses of the war at the end of 1900 were over £100,000,000; and as the army in South Africa was not considerably diminished after the end of organized Boer resistance, the military outlay showed little decrease during the closing months of the year.

What the War Cost the Boers.—Statistics are not available as to the loss of life on the side of the Boers, and even approximations cannot be relied on. Concerning the forces in the field, the greatest uncertainty likewise existed. It was supposed, however, that at the beginning of the war there were 40,000 Boers under arms. In December, 1900, there could not have been more than 5000. Their dead and wounded must have been very considerable, to judge from their official lists, which included generally those only among the slain who could be identified. In September, 1900, the British held 15,000 Boer prisoners in South Africa, at St. Helena, and in Ceylon. Financially the republics were in easy circumstances. Much gold was coined at Pretoria, and raw bullion was exported in large quantities to pay for material and supplies in Europe.

TRINIDAD and TOBAGO, the two most southerly West Indian islands constituting a British crown colony and having an area of 1754 square miles, and 114 square miles, respectively, with an estimated population at the close of 1899 of 290,000 for Trinidad, and 21,000 for Tobago. Chief town, Port of Spain on the island of

Trinidad. Principal imports are foodstuffs and manufactured goods, especially textiles. The exports include cacao, sugar, asphalt, molasses, rum and bitters. The asphalt lake of 114 acres near the village of La Brea, Trinidad, has been one of the chief sources of asphalt in the world. In 1899 the prosperity of this industry exceeded that of any previous year.

TRINITY COLLEGE, at Hartford, Conn., founded in 1824, has productive funds amounting to \$750,000. In June, 1900, the Hall of Natural History, including a museum, a lecture room, laboratories, and other rooms for the various interests of the department, was completed at a cost of \$50,000. In 1899-1900 the college had 24 instructors and 137 students, 6 of whom were pursuing graduate courses. Its income for the last college year was \$90,000, receipts from benefactions being \$45,000. The library contains 40,736 volumes and 26,335 pamphlets, an increase during the year of 1054 books and 335 pamphlets.

TRIPOLI, a province of the Ottoman Empire, in northern Africa, situated between Algeria, Tunis, and Egypt. Its area is estimated at nearly 400,000 square miles, and the population at 1,300,000. The chief town is Tripoli, with a population of 40,000. Agriculture is the chief occupation. The annual value of grains exported amounts to about 2,000,000 francs. The industries of the province are mostly confined to the weaving of cotton and straw. The aggregate trade of the province for 1899 amounted to 19,904,000 francs. The imports amounted to 9,625,000 francs and consisted mostly of coffee, drugs, tea, iron and ironware, soap, rice and silk. Over 30 per cent. of the imports come from Great Britain. The exports for 1899 amounted to 10,279,000 francs. The principal articles of export were esparto grass, 2,410,000 francs; hides and skins, 1,480,000 francs; ostrich feathers, 1,450,000 francs; and sponges, 1,410,000. The number of ships entered at the ports of the province during 1899 was 266 steamers, with a tonnage of 258,110, and 630 sailing vessels, with a tonnage of 18,008. About 40 per cent. of the shipping is in Italian bottoms. The revenue and expenditures for 1899 amounted to £110,000 and £160,000, respectively.

TROPICAL MEDICINE. 1900 adds two more schools of tropical medicine to the list. Dr. J. H. Kohlbrugge has been appointed professor of tropical medicine in the University of Utrecht, Holland, and M. Le Dantec has been chosen to give a course of instruction in tropical diseases in the University of Bordeaux, France. See ENTOMOLOGY (paragraph Insects and Disease).

TRUSTS. *Trusts in the United States.*—In the *Bulletin* of the Department of Labor, issued July, 1900, a report is presented by the commissioner of labor upon Trusts and Industrial Combinations. In co-operation with the Industrial Commission a statistical inquiry was made by the department to ascertain "the basis of capitalization in Industrial Combinations, the degree of their monopoly of the domestic market, the degree of their control over the prices of products and their influence upon wages and employment." A searching schedule of inquiry was submitted to the combinations, and the more or less complete replies of forty-one of them form the groundwork for the report. The organization of a few of the larger and older combinations was effected for the purpose of holding the stock of other corporations, proportionately issuing their own stock therefor. Such combinations do not directly own the plants of the constituent companies nor engage in manufacturing, but from the profits of the constituent companies the dividends of the holding company are paid. In most cases, however, the combination buys directly, for cash or stock, the plants of the entering companies, and the latter go out of existence as individual companies. The commonly held belief that in large corporations directors are too little responsible to the stockholders and give them too few enlightening reports on the actual status and management of the business was shown on the whole to be a justified belief. Nearly all the combinations answering the commissioner's questions on this subject stated that they reported to the stockholders merely "the general affairs of the company" or the "general condition of the business." In the matter of wages, the reports show an increase both in the number of men employed and in the salaries given. It is pointed out, however, that the returns do not justify sweeping conclusions, both because the reports are incomplete and because many of the combinations were formed from the separate companies during 1898 and 1899, a time of remarkable industrial expansion and prosperity. In 13 combinations the total number of skilled laborers employed was 40,217; unskilled laborers, 54,214, and clerks, 3167. In the separate companies out of which these combinations were formed and prior to consolidation the number of skilled laborers employed was 33,637; unskilled laborers, 43,669, and clerks, 2094. From fairly complete returns from 16 combinations the increase of wages after consolidation averaged for all classes 12.61. The greatest increase appeared in the case of unskilled laborers. The wages of travelling salesmen had decreased by 7.43 per cent., and those of superintendents and foremen by 2.77 per cent. In reference to the prices charged by the combinations for their products and the undue profit which some of

these are claimed to represent, it is difficult to reach a conclusion generally applicable. While it seems evident that under a favorably operating tariff law combinations can and do raise prices unduly, proof is inadequate to show that such prices can be sustained indefinitely. A decreased demand, an impending competition, or an increase in the cost of labor or raw material, or both, is pretty likely periodically to narrow the margin between the producing and the selling price. See INDUSTRIAL COMMISSION.

Trust Capitalization.—During 1900 there were many discussions by experts in finance and economics upon the financial conditions underlying the formation of industrial trusts, and more especially in regard to the capitalization involved in the formation of those trusts. The majority of these companies were organized on one pattern, and present, according to nearly all the authorities that have written upon the subject, very similar conditions of capitalization. In the organization of about all of them the promoter was the dominant figure. It was the business of the promoter to persuade the various companies in any particular industry that it was to their interest to unite. The promoter raised the money needed for such action and arranged for floating the stock of the new concern. In approaching the separate companies the promoter commonly offered two inducements for amalgamation. He pointed out first the economy in production which would result, and, secondly, he offered a bonus of stock or cash proportionate to the requirements of the situation. Mill or factory owners who were already making money were generally unwilling to sink their identity in a trust unless some value was presented to them beyond the worth of their business. So the promoter offered them extra either cash or common stock in the trust to be formed. The actual worth of the separate company was to be paid over to the owner by shares of preferred stock in the new combination. Obviously it was generally to the advantage of the promoter to have the new combination capitalized for as large an amount as possible, because then his *pro rata* share for services rendered would be greater. Obviously, too, the separate owners of companies were anxious to be given stock representing as high a value as possible, because, as their financial interests in the new company were to be fully protected by the preferred stock, the bonus given to them in common stock would not seriously affect the financial stability of the trust, but would aid their individual pocket-books. Besides the common stock given to the separate owners, it was generally necessary to float a large amount through the underwriters to obtain money for obdurate interests. The underwriters and the individuals possessing large blocks of the stock were equally anxious to exchange it with the public for cash. The result was an enormous speculative dealing in industrial common stock, and in nearly every case the common stock steadily declined in value. The main reasons why common stock of industrials is so low and why it will very likely go lower are twofold. In the first place, the preferred stock represents approximately the value of the plant. Upon the preferred stock so issued dividends are to be declared at the rate of 6 or 7 per cent. Moreover, it has generally been stipulated that the dividends on the preferred stock are to be cumulative—that is, if in any year 6 or 7 per cent. is not paid, then it will be paid in the next, and until all such lost dividends are made up there will not be any dividends declared on the common stock. The practical effect of this is that owners of common stock must in the years of plenty pay over to the owners of preferred stock the losses incurred by the latter in the years of want. A second reason why the outlook for common stock of industrials is unpromising is because as a general rule the public holds it and the original receivers thereof do not. The mill owners and promoters and underwriters, having once unloaded, have no further interest or responsibility in the matter. So that it seems likely that when the combination is in receipt of more money than it actually needs to pay dividends on preferred stock it will be likely to invest this money, not for dividends on common stock, but for the acquisition of new plants and machinery or for a surplus fund.

Economies in Trusts.—It has been insisted by such authorities as Professor Jenks, of Cornell University, that a very real economy has commonly resulted from industrial combinations. These economies may be summarized as follows. There is, first, a saving of cross freights. If two separate companies in the same industry, situated in different parts of the country, attempt, as commonly under a competitive régime, to sell their products both in their own and in their competitors' territory, a large amount of economically unnecessary expense is incurred for cross freights. Now, if these companies unite and each gives its exclusive attention to developing trade in its own territory these cross freights are very largely or totally obviated. The second economy effected by industrial trusts is in the cost of selling their products. If a combination controls the major part of the products in its own line it becomes unnecessary for it to keep up the same relative expenditure either for advertising or for salesmen. There is the same demand for the goods of the trust as there was for the aggregate output of the separate companies, but the competition being re-

duced or eliminated the necessity for urging prospective purchasers has been reduced. A third saving effected by the trust is simply that which results from a more exact organization of the business and by dovetailing more completely the production, manufacture, and distribution of the products. Finally, a trust can enter a foreign market, while a single company cannot. With the release of home competition and the command of more capital this foreign market can be utilized to prevent a glut in the home market and to maintain prices. A different view of the matter is taken by Professor Richard T. Ely, who, in his recent work on *Monopolies and Trusts*, endeavors to show that many so-called trust economies are chimerical. He takes up one by one the alleged points of superiority or advantage possessed by the trusts as compared with competitive business to show that they either do not exist or, if they do exist, are shared by all concerns carrying on production on a large scale. Thus (1) to the argument that the trust can drive a better bargain in the purchase of raw materials, Professor Ely replies that "every day the careful observer may witness the shrewd man making small purchases at a low rate which could with difficulty be duplicated on a large scale." He admits that "there are many cases in which the purchaser of large quantities of commodities has a marked advantage." But the point of maximum effectiveness is believed to be sufficiently low to be within reach of the competitive business on a large scale. 2. The same argument holds as to freight rates: "It is generally conceded that a railway may with propriety charge relatively less for 'carload lots' than for a few pounds," but if a railway is honestly managed the point where further advantages cease to be gained from the bulk of the traffic is reached so soon as to be within the reach of competitive business as well. 3. As to the claim that fixed charges decrease relatively as the magnitude of the business increases, it is again claimed that "a point of maximum efficiency is sooner or later reached, and new fixed charges emerge as business grows." 4. The trust "may have a plant of maximum efficiency," but so may any large competing company. As to the advantages of monopolistic concerns resulting from dispensing with advertising, with the soliciting of business through commercial travellers and the needless duplication of plants, Professor Ely, while conceding these, asserts that they go hand in hand with the loss of the advantages of the competitive system: "When once monopoly is secure it is likely to become listless, non-inventive, content to follow in the old ways, indifferent to small economies." For an account of the attitude of Congress toward trusts, see UNITED STATES (paragraph The Trust Problem); for a discussion of the merits and demerits of trusts, and of the opinion of them held by the various political bodies, see PRESIDENTIAL CAMPAIGN (paragraphs Other Conventions, Democratic and Republican Platforms, and the Trust Issue). An account of various corporation laws, decisions, and agitations will be found in the articles on the separate States, especially NEW YORK, NEW JERSEY, MISSISSIPPI, and MISSOURI.

TUAN, PRINCE (TSAI CHI), an officer in the Chinese imperial army, and a prominent participant in the Boxer uprising, is the nephew of the Emperor Hien-Feng, who died in 1861, and is the first cousin of the reigning Emperor Kwang-Hsu (*q.v.*). He is now about 40 years of age. Tuan was one of the Empress Dowager's strong supporters in the *coup d'état* of 1898. The son of Tuan, a boy of 14, was selected by the Empress Dowager to be the successor to the throne, on the forced abdication of the emperor in January, 1900. Prince Tuan was president of the Society of the Big Sword, out of which emerged the Boxers. On September 25, 1900, on demand of the Powers he was degraded by the Chinese government and further punishment for his part in the disturbance was promised.

TUBERCULOSIS. A society is being organized by Dr. A. J. Austen Kelly, of Brooklyn, New York City, with the object of establishing colonies for tuberculous patients in northern New York State. About 5000 acres have been bought in the Adirondack region, where small farms are to be established and the patient afforded an opportunity for out-of-door occupation. The New York State Hospital for the Tuberculous will be established at Lake Clear, in the Adirondack region, on a site selected by a commission appointed last year by Governor Roosevelt, the Forest Preserve and the State Board of Health acquiescing. It is stated that the State Forestry Commission will purchase 40,000 acres at the head waters of each of the three principal rivers of New York State, in order to be near forests, for the future State care of the tuberculous, as well as for out-of-door recreation for other invalids.

A home for the tuberculous was projected in 1900 for Asheville, N. C., a large farm having been purchased, with a view to giving the poorer patients a chance to be self-supporting. The Jewish Hospital for Consumptives in Denver, Col., claims to be the only free institution of its kind in the world. The annual expenses are about \$20,000. A wing was projected in 1900, to cost \$30,000. The 35 trustees perfected a permanent organization at their meeting at Cincinnati, O., November 11, 1900.

It was reported early in the autumn of 1900 by the United States commissioner at Nome, Alaska, that hundreds of Yukon natives were dying of tuberculosis, and

asked aid for them from the government during the winter, lest they die of starvation.

Cure and Prevention.—Several alleged cures for tuberculosis have been bruited about by the daily secular press during 1900. The raw meat treatment was declared futile after a trial in an establishment in Belgium. Sodium cinnamate, or Hetol, was widely named as a new and sure cure. This drug was first used by Professor Albert Landerer, of Stuttgart, Germany, in 1888, in the form of an intravenous injection of a fraction of a grain in solution. It is not a cure, though in a few cases it has apparently improved the conditions. The value of injections of nitrogen into the pleural cavities in tuberculosis is still undecided. Some physicians claim that an injection of from 50 to 200 cubic inches of the pure gas will not be entirely absorbed from the pleura for from 3 to 6 months, and that during this period expectoration is decreased, appetite is improved, weight is increased and hemorrhage is stopped. Some claim that the nitrogen treatment is only effective when the lung is absolutely compressed, while admitting its efficacy in stopping hemorrhage. The therapeutic effect of electric light from a lamp applied externally has been marked in a number of cases of laryngeal tuberculosis, following a suggestion from a demonstration by Bengel that darkness causes the cessation of motion in ciliated corpuscles, while sunlight revived it. In general, prevention of the spread of tuberculosis may be accomplished by killing tuberculous cattle, rigidly inspecting dairies, burning of sputa from tuberculous patients and a dissemination of the fact of the communicability of tuberculosis among the masses. See SANITATION; SERUM THERAPY; and VITAL STATISTICS.

TULANE UNIVERSITY OF LOUISIANA, an institution for the higher education of the white youth of the South, located at New Orleans. It comprises a graduate department, college of arts and sciences, college of technology, H. Sophie Newcomb Memorial College for young women, law department, and medical department. There are more than 5000 alumni of all departments. During the session of 1900-01, 1120 students matriculated in all departments. There are 80 professors and instructors. The library numbers 35,000 volumes. The year's income from all sources was about \$131,600.

TUNIS, a French protectorate on the northern coast of Africa. It has an estimated area of a little over 51,000 square miles and a population of about 1,900,000, including 102,000 Europeans. The native population consists mostly of Bedouin Arabs and Kabyles. The capital is Tunis, with a population of 153,000, including about 40,000 Europeans. The protectorate is nominally administered by the Bey Sidi Ali, but is virtually under the control of the French foreign office, which has a special department for Tunisian affairs. The French government is represented in Tunis by a resident general, who is also minister of foreign affairs for the protectorate, and a ministry of 9 members, 7 French and 2 Arab. There are French courts for cases between Europeans, and Arab courts for the natives. The principal occupation is agriculture, cereals, dates, oil, and wine being the principal products as well as exports. The principal minerals worked are galena, calamine, and phosphate, the latter being very actively exploited in the southern part of the protectorate. The imports and exports of Tunis for 1898 amounted to 62,744,681 francs and 52,214,651 francs respectively, against 53,820,670 francs and 36,730,871 francs in 1897. Of the total commerce, France was credited with 38,797,736 francs of the imports and 32,800,973 francs of the exports. Next to France was Great Britain, with 6,570,097 francs of imports and 6,182,812 francs of exports. The total length of railways in 1898 was 883 miles, of which 863 miles belonged to the state. There is a line 200 miles in length from Gafsa to the coast, used mainly for the transportation of phosphate. The total ordinary revenue and expenditures for 1900 were estimated at 26,089,300 francs and 25,988,215 francs respectively. The main sources of revenue are direct taxes, customs, monopolies, and state domains. The public debt amounts to £5,702,000 at 3½ per cent. interest.

TUNNELS. During 1900 several notable tunnels were in the course of construction. In Europe the great Simplon Tunnel through the Alps was being rapidly advanced by the Jura-Simplon Railway Company. This railway company was organized in 1881 to build a railway from Brigue, Switzerland, to Domo d'Ossola, Italy. Starting from Brigue, the new railway will run up the Rhone Valley 1¼ miles and enter the tunnel to the right on a curve of 1050 feet radius. At a distance of 153 yards from the entrance the straight portion of the tunnel commences and extends for 12 miles. The line from this point curves to the left with a radius of 1311 feet. Commencing at the northern entrance, a gradient of 1 in 500 rises for a length of 5½ miles to a level of 500 yards in length at the centre, and then a gradient of 1 in 143 descends to the Italian side. There will eventually be two parallel single-track tunnels, having their centres 56 feet apart; but at present only one of these tunnels is being excavated to full size, the other being excavated just large enough to provide a gallery for the entrance of materials and for ventilation.

This gallery is connected with the full-size tunnel by means of cross tunnels every 220 yards. The tunnel is through rock, and a very elaborate mechanical plant has been established at each end for prosecuting the work. On January 1, 1900, the full-size tunnel had been completed for 2515 yards at the north end and for 1720 yards at the south end. During 1900 work was progressing at the rate of 16 feet per day, but complete figures of the advance made during the year were not available on January 1, 1901.

Next to the Simplon Tunnel the greatest railway tunnel work of the last few years has been the Cascade Tunnel on the Great Northern Railway, in Montana, which was completed in December, 1900. This tunnel has a total length of 2.61 miles, and carries the railway through the ridge of the Cascade Mountains, which previously had been crossed by a "switchback," or series of zigzags. The width in the clear inside of the permanent lining is 16 feet, and the height from the top of rail to bottom of arch is 21½ feet. The tunnel is lined with concrete masonry. The tunnel excavation proper was commenced August 20, 1897, and completed October 13, 1900. The average monthly progress in the tunnel was 350 feet, and the average daily progress was 11.53 feet. The work on the concrete lining of the tunnel was begun November 17, 1899, and completed November 17, 1900, the average monthly progress being 1115 feet. During 1900 a much shorter tunnel was driven through the summit of the Rocky Mountains on the Union Pacific Railway at Sherman, Wyo., about 40 miles west of Cheyenne, Wyo. This tunnel was 1800 feet long, and provides for a double track. See RAPID TRANSIT AND WATER-WORKS.

TURKEY, or the OTTOMAN EMPIRE, comprises a large amount of territory in Europe, Asia, and Africa. The area of the empire, including those states which are only nominally in its possession, is estimated at 1,576,700 square miles, with a population of over 39,000,000. The territory under the immediate jurisdiction of Turkey, however, occupies only 1,111,741 square miles, with a population of about 24,000,000. The capital of the empire is Constantinople, with a population of nearly 900,000. Agriculture is the main occupation, but only a part of the arable land is cultivated. This backwardness of agriculture is attributed to the absence of good roads, the extortionate custom duties imposed on the exports of products from one province to another, and the system of levying tithes. The main agricultural products are tobacco, cereals, cotton, figs, grapes, and olives. The cultivation of silk is becoming an important industry, and the export of wine is also increasing. The most important industries are the manufacturing of rose oil and the weaving of carpets and some light materials for dress. The mineral deposits of the empire are very rich, but so far very few minerals are mined and worked, with the exception of copper, which is used for utensils. The statistics for the commerce of Turkey are very deficient, and no official figures can be obtained for a later period than 1896. According to estimates, the imports and exports for 1898 amounted to 24,070,000 and 13,750,000 Turkish pounds respectively. A Turkish pound is equivalent to \$4.40 in United States currency. The trade is chiefly with Great Britain, Austria-Hungary, Russia, and the Balkan States. The trade of Turkey with the United States shows a considerable increase for the calendar year 1900, which is, undoubtedly, due in part to the establishment of direct steamship service between New York and Constantinople. The imports from Turkey to the United States have increased from \$9,821,452 in 1898 to \$15,980,391 in 1900. The imports from United States for 1900 amounted to \$2,147,720, against \$1,088,266 in 1899 and \$1,318,862 in 1898. Our exports to Turkey largely consist of flour, leather, and iron products. The merchant marine of Turkey in 1900 consisted of 79 steamers, with a tonnage of 47,423, and 1380 sailing vessels, with a tonnage of 261,780. Military service is compulsory for every Mussulman between the ages of 20 and 41. The greater part of the non-Mussulman inhabitants of Turkey are exempt from military service, but are compelled to pay a tax instead. The war strength of the Turkish army is estimated at 900,000, including 55,300 cavalry, 54,720 artillery, 583,200 infantry, and over 7000 engineers. The Turkish army is composed of excellent fighting material. The length of the railway lines of European and Asiatic Turkey at the end of 1898 was 2953 miles. There were also about 21,800 miles of telegraph lines, with 1649 offices. Education in Turkey is free, and the schools are connected with the mosques. The state religion is Mohammedanism, but there are seven non-Mohammedan religious denominations which are recognized and permitted by the Turkish government. The number of Christians in Turkey is estimated at 5,000,000. The latest available statistics for the finances of Turkey give the revenue and expenditures as £16,828,475 and £16,754,019 respectively. The public debt at the end of 1899 was £125,000,000.

History.—Diplomatic relations between the United States and Turkey were in a strained condition during the greater part of 1900, owing to the sultan's failure to pay the indemnity of \$50,000 due American subjects for the destruction of property by Turkish rioters during the last few years. Up to 1898 the Porte had

refused to admit the claim and had met our government's remonstrances by imposing oppressive taxes on American exports and declining to receive the American consul at Erzerum as a duly accredited representative. In 1898 Oscar S. Strauss was appointed minister to Turkey for the express purpose of re-establishing a *modus vivendi* with the Porte. After long negotiation he succeeded in bringing the Turkish government to acknowledge the claim for the indemnity, and a method for its settlement was agreed upon. In 1900 the United States government began to press its demands for the payment of the debt. The sultan entered on a policy of apologetic postponements, which practically amounted to a refusal to meet his obligations. Accordingly, Mr. Strauss resigned his post during the year. It was stated that his task had come to an end, inasmuch as the sultan had been brought to terms in the matter of the indemnity and had consented to receive the consul at Erzerum; but probably the minister's resignation was due to the embarrassing position in which he found himself placed, the Turkish authorities merely temporizing with the minister, who was not able to enforce his demands. A demonstration in force was decided on by the United States Government late in the year, and the battle-ship *Kearsarge*, accompanied by the training-ship *Dixie*, was sent to Smyrna in December. The effect of this movement, however, was not favorable. Germany, which of late has come to have intimate relations with Turkey, and whose influence is especially strong in Smyrna, was opposed to any acts of intimidation on the part of a foreign Power; and the sultan, relying upon Germany's moral support, refused to meet the demands of the United States. The difficulty of wresting the indemnity from the Porte is readily comprehensible when it is recognized that the payment of the American claim would be followed by a demand for a settlement of accounts from her other creditors; and for this the country is, of course, totally unprepared. It is estimated that more than \$50,000,000 is owing to Russian subjects alone, and great pressure is being brought to bear by the czar's government for the liquidation of a part of this debt.

Concessions were granted to a Russian company to construct a railway from Kars to Erzerum and from Erzerum to Trebizond. It was provided that the rights granted should not interfere with those of the French and German Company, to whom the construction of the Euphrates Valley Railway, connecting Smyrna with the Persian Gulf, had been conceded. Preliminary surveys on the latter line were begun in 1900. On September 1 the sultan celebrated the twenty-fifth anniversary of his accession to the throne and received the congratulations of the European nations through special ambassadors. In December the sultan issued an iradé, commanding the minister of marine to reorganize the fleet and to put it into such a state of efficiency as to provide an adequate defence against the Powers.

TUSKEGEE NORMAL AND INDUSTRIAL INSTITUTE at Tuskegee, Ala., was founded 1881 in the interests of the colored race by Booker T. Washington who has been principal of the institution since its organization. The school is non-sectarian, and though its principal field of work is manual and industrial training, the interests of normal, academic, and religious instruction are not neglected. During the year 1899-1900 instruction was given in 28 industries; and the Slater-Armstrong Memorial Trades' Building, which was dedicated on January 10, 1900, was erected essentially by the labor of the students under the direction of their instructors. A careful census of all the graduates and former students of the school shows that at least three-fourths are actually engaged in the industries which they learned at the institution. During the last school year the total enrolment of students was 1231, the average attendance being 1083, 321 women and 762 men, representing 27 States and Territories of the United States, Africa, Porto Rico, Cuba, Jamaica, and Barbados. For some account of the work of the institution, see WASHINGTON, BOOKER T.; and for a discussion of the present condition of the negro in the South generally, see ALABAMA (paragraph Montgomery Conference).

TYLER, MOSES COIT, A.M., LL.D., L.H.D., American author and educator, died at Ithaca, N. Y., December 26, 1900. Born at Griswold, Conn., August 2, 1835, he was in 1857 graduated from Yale, where he also pursued a theological course, afterward supplemented at Andover. He was pastor of the First Congregational Church, Poughkeepsie, N. Y., from 1860 to 1862; and when obliged by ill health to resign spent some time in travel in England. There he obtained wide literary acquaintance, including Mr. Henry Morley, with whom he collaborated in a *Manual of English Literature* (1879). During this visit he contributed to the *Independent* and the *Nation* a series of impressions, which attracted national notice and were later collected in part as *Glimpses of England* (1898). He was called by the University of Michigan to its chair of English language and literature, which he filled from 1867 to 1881; going in the latter year to Cornell as the head of the first department of American history established in America. In 1883 he was ordained priest of the Protestant Episcopal Church, and in 1873-74 was literary editor of the New

York *Christian Union* (now the *Outlook*). As an academic lecturer he was singularly effective. His methods of instruction were original, and may be said to have aroused among his colleagues an impulse toward more intelligent class-room procedure. As one of many services to education it may be mentioned that he was a pioneer in the introduction into this country of the *seminar* of German universities. To the world at large he is best known for three works of pre-eminent scholarship—*A History of American Literature During the Colonial Time* (1878); *Patrick Henry* (American Statesmen Series) (1888), and *The Literary History of the American Revolution, 1763-83* (1897). In these, as throughout the limited number of his writings, he combines with flawless accuracy and equipoise of judgment a rare literary sensitiveness. At the time of his death he was a member of the Authors' Club, New York, and first vice-president of the American Historical Association. His further volumes are *Brownville Papers* (1869) and *Three Men of Letters* (1894). Many magazine articles remain uncollected.

TYPHOID FEVER. Contaminated water is the principal cause of typhoid, or enteric, fever. An epidemic, occurring in the spring of 1900 in Forestville, Conn., was traced to a contaminated water supply. Impure well water and decayed fruits and vegetables were assigned by physicians as responsible for an epidemic of typhoid in Watertown, N. Y., in July. Chicago (see ILLINOIS, paragraph Chicago Drainage Canal) has completed during the year a drainage canal, emptying into the river, whereby a large part of the sewage of the city is diverted from the lake. The drinking water of the city is taken from the lake a few miles from the city. Since the amount of sewage mixed with the drinking water has been lessened the mortality from typhoid has diminished, and the whole death-rate of the city has been reduced. In October the death-rate was 1.06 per cent., the lowest rate for that month in 10 years. It was reported by the English War Office in July that the mortality from enteric fever among the British troops at Bloemfontein was about 21 per cent., or 1370 deaths out of 6369 cases, in 3 months. Exhausting marches and drinking water containing decomposing bodies of animals and flowing from the Boer camp were assigned as causes. In the Irish Hospital at Pretoria a mortality of 11.6 per cent. in enteric cases was reported in October, while the Boer Volks Hospital at Bloemfontein, with alleged less strict classifying, states its enteric mortality as 8.5 per cent. In December, 1900, the government, in the House of Commons, answered a question in stating that there had been 15,625 cases of typhoid fever among the British troops in South Africa, of which number 3642 proved fatal. See SERUM-THERAPY.

Arab Races.—Remlinger, at the October, 1900, meeting of the Société de Biologie, in Paris, France, declared that the Arab is immune to typhoid fever and general diseases of the intestinal tract, while very susceptible to tuberculosis, pneumonia, and other disorders of the respiratory tract. His explanation is that the Arab is accustomed from childhood to drink contaminated water and to breathe the pure air of the desert.

TYPOGRAPHICAL UNION, INTERNATIONAL, organized in 1855, had in 1900 a membership of 38,000; publishes the *Typographical Journal*. The general meeting for 1901 will be held in Birmingham, Ala., August 12-17. President, James M. Lynch; secretary, John W. Bramwood, 7 DeSoto Block, Indianapolis, Ind.

UGANDA, a British protectorate, a part of British East Africa, comprises the native kingdom of Uganda, and certain other territories, including Unyoro, Koki, and Usoga. The protectorate has an estimated area of 120,000 square miles and an estimated population of about 3,920,000. The kingdom of Uganda, or "Uganda proper," with upward of 300,000 inhabitants, is under the nominal rule of the infant son of King Mwanga. The capital is Mengo, near the British fort Kampala, on the shore of Victoria Nyanza, where a sort of native parliament convenes. The administration of the protectorate is in the hands of a special commissioner (Sir H. H. Johnston, since 1899), resident at Fort Alice.

The British administration maintains a military force of some 2000 Soudanese and 300 Indian soldiers, under British officers. The local revenue of the protectorate has amounted to about £23,000. The trade—chiefly in ivory, cattle, rubber, and wild coffee—is mainly under German control and will probably remain so until the British railway from Mombasa, on the coast of the East Africa Protectorate, to the lake is completed. (See EAST AFRICA PROTECTORATE.) For defraying the cost of necessary administration, the commissioner recommended a moderate hut-tax, and also an elephant-shooting license. In the late summer and the autumn of 1900 a British punitive force was engaged against a branch of the once powerful Masai, known as the Wa Nandi, who had destroyed telegraph lines and attacked caravans along the Uganda-Mombasa road. In November the trouble appeared to be practically at an end.

UNITARIANS, in a particular sense applied to a sect which asserts the unity of the Godhead, originated as a denomination of the United States in 1815. They

maintain a congregational polity and allow the broadest range of belief, excluding none on account of doctrinal views. A biennial National Conference performs deliberate functions and the American Unitarian Association carries on the executive work of the church. There are also state and local conferences. The Japanese mission was transferred to native control, and the last of American representatives withdrawn. Unitarians control the Meadville Theological School and have, under their auspices a number of secondary schools, one of which, the Hackley School at Tarrytown, N. Y., was dedicated in 1900. The agitation for closer federation between Unitarians and Universalists, inaugurated in the Unitarian Church, has resulted in a conference. (See UNIVERSALISTS.) The denomination now has about 75,000 members, 555 ministers, and 464 churches, with a property value of \$9,894,000.

American Unitarian Association, founded 1825, celebrated its seventy-fifth annual meeting on May 22, 1900. The association maintains headquarters at 25 Beacon Street, Boston, and subordinate branches in New York and San Francisco. President, Rev. Samuel A. Eliot, D.D.; secretary, Rev. Charles E. St. John.

UNITED BRETHREN IN CHRIST, a sect resembling Methodists in doctrine and practice, founded 1760 by Philip William Otterbein and formally organized in 1800. The year 1900 thus marked the centennial of the denomination, and many commemorative meetings were held. The church, which now has 4229 churches, 2413 ministers, and 243,841 members, a gain of 5157 over 1899, contributed, during the past year, \$1,521,227.64, of which \$89,250.01 was devoted to missions.

United Brethren in Christ (Old Constitution), a division (Radicals) which adhered to the old constitution when, in 1889, the main body announced their conformity to a revision. For 1900, they report 670 ministers, 817 churches, and 26,643 members.

UNITED EVANGELICAL CHURCH. The churches now included under this head were members of the Evangelical Association (*q.v.*) until 1891, when a division arose due to disputes of rival conferences. A steady growth has marked the short existence of the church, which reports for 1900, 478 ministers, 763 church buildings, valued at \$1,880,140, and 60,993 members, while its Sunday schools, 785 in number, have 76,718 scholars and 11,170 teachers. *The Evangelical*, published at Harrisburg, Penn., is the denominational paper.

UNITED PRESBYTERIAN CHURCH OF NORTH AMERICA, in polity and discipline similar to other Presbyterian bodies, established, as the present organization, in 1858, by a union of Associate and Associate Reformed Churches. The denomination controls a number of colleges, seminaries, and classical schools, maintains foreign missions in Trinidad, Syria, India, Egypt, and China, as well as extensive home missions, and owns a publishing house at Pittsburg, Penn. For 1900, they report 918 ministers, 911 churches, and 115,901 communicants.

UNITED STATES. The total area belonging to or under the jurisdiction of the United States is estimated by the United States Coast and Geodetic Survey to be 3,731,900 square miles, divided as follows: United States, 3,025,600; Alaska, 577,390; Philippine Islands, 119,000; Hawaiian Islands, 6250; Porto Rico, 3530; Guam Island, Tutuila Island, and Midway Island, 220. The total population, including Alaska, Hawaii, and other territories, but excepting Porto Rico and the Philippines, is given by the census (see article CENSUS) at 76,304,799.

Agriculture.—The harvests for 1900 show, on the whole, an improvement over those of 1899, although the crops of wheat, barley, and rye were not up to the standard of 1899. The corn crop was one of the four largest crops ever gathered, while the oat crop has been exceeded only once. The total farm value of the 8 principal crops (excluding cotton) for 1900 is estimated at over \$1,800,000,000, against \$1,700,000,000 in 1899. The largest wheat crop was harvested in Kansas, 82,488,655 bushels, against 36,468,044 bushels in 1899. The largest corn-producing State in 1900 was Iowa, with 305,859,940 bushels, against 242,249,841 bushels in the preceding year. The export of agricultural products in 1900 increased from \$792,811,733 to \$844,616,530, although the exports of breadstuffs decreased over \$51,800,000. The prices of the principal grains during 1900 show an increase over 1899. The average price of wheat for the year was 61.9 cents, against 58.4 cents in 1899. The price of corn increased still more, the average price for 1900 being 35.7 cents, against 30.3 cents in 1899 and 28.7 cents in 1898. The exports of animals from the United States during 1900 were valued at \$44,727,180, against \$36,646,451 in 1899. This increase in exportation is largely to be attributed to the South African War, as may be seen from the fact that the total value of mules and horses exported during the year shows an increase of \$2,928,359 and \$3,250,967 respectively. For further details, see articles on WHEAT; CORN; COTTON, etc.

Public Domain.—The total present area of the public lands may be stated as approximately 1,071,881,662 acres, of which 917,135,880 acres are not disposed of,

and 154,745,782 acres are reserved for various purposes. See the article LANDS, PUBLIC, and also FORESTRY (paragraph National Forestry Policy).

Commerce—American Competition.—There was widespread discussion during the year 1900 in the European, and especially in the English press (see article GREAT BRITAIN, paragraph Commerce) upon the competition of the United States for the world's markets. This competition, really spectacular in engineering branches (see IRON AND STEEL), extended to almost all products. For the year ending October, 1900, the total commerce of Great Britain was \$3,905,353,335. Of this sum, exports amounted to \$1,410,672,922, and imports to \$2,494,680,413. In the United States, on the contrary, the total foreign trade for the calendar year of 1900 was \$2,306,969,003. But of this sum the exports amounted to \$1,477,949,666, and the imports to \$829,019,337—a favorable balance of exports over imports of \$648,930,329. It was pointed out that the significance of these figures lies in the fact that American industries have hitherto been mainly concerned in supplying their own markets, but now with the saturation of the home demand a foreign outlet is increasingly sought. In dull times American managers are willing to export at cost prices, in order to retain a hold upon the home market and to prevent home prices from being further depressed. The commercial attack of "a people so versatile, so farseeing, and so enduring in effort that the very forces of nature seem to take more plastic shape in their hands" is regarded with apprehension. English writers state that in America comparatively young men are given control of large enterprises to an extent unknown in England and on the Continent, and that these men having been accustomed from their schoolboy days to "talk shop" with their fathers and relatives, enter business "with a stock of knowledge of which the young Englishman fresh from the university or a public school has not an inkling." Speaking of the radicalism and initiative resulting in America from this system, the *London Times* says editorially: "What has succeeded in the past will not succeed in the future," is a working maxim with the best men of business, who are ready to throw their experience as well as their antiquated machinery on the scrap heap. There are some signs of a change in this respect in this country; but the idea that there is something respectable, solid, and satisfactory in doing in the mill, workshop, and counting house what one's father did, dies hard." The superiority of American workmen is also insisted upon. The *London Spectator* on December 29 quotes a British trade paper correspondent as saying: "From a careful calculation, made after comparing notes with other observers and taking the figures 1 to 1¼ as representing the producing capacity of the ordinary British workman, I consider the Swiss-German as fairly represented by 1¼ and the Yankee by 2¼." Another feature of American competition which received notice is the consolidation of capital for industrial purposes. "We are daily reminded," a British statesman remarks, "of the gigantic fortunes which are accumulated in America—fortunes to which nothing in this country bears any relation whatever, and which in themselves constitute an enormous commercial force. The Americans, as it appears, are scarcely satisfied with these individual fortunes, but use them, by combination in trusts, to make a capital and a power which, wielded as it is by one or two minds, is almost irresistible." The *Hamburger-Fremdenblatt* points out that the United States, more than 80 per cent. of whose exports ten years ago were agricultural products, is to-day sending out manufactured goods to nearly one-third of its total exports. "In other words, the Union is marching toward conversion from an agricultural to an industrial nation." And the paper adds significantly: "It may be remarked that the typewriting machine with which this article is written was made in America; that it stands on an American table in an office furnished with American desks, bookcases, and chairs, which cannot be made in Europe of equal quality, so practical and convenient, for a similar price. *The list of such articles, apparently unimportant in themselves, but in their aggregate number and value of the highest significance, could be extended indefinitely.*" The conclusion is that Europe "must fight Americanism with its own methods . . . must adopt improved and progressive methods in every department of industry; must use more and more effective machinery. Manufacturers, as well as merchants, must go to America, send thither their assistants and workingmen, not merely to superficially observe the methods there employed, but to study them thoroughly, to adopt them, and, wherever possible, to improve upon them, just as the Americans have done and are still doing in Europe." On the other hand, it is said that Americans have taken much less pains than Europeans to perfect the details of foreign trade competition; that they should institute more scientific export methods; arrange for better banking-transportation facilities, give more liberal credits to foreigners, and manufacture, especially for the various foreign markets, with more regard to climatic and race requirements. Europeans also have a much more thorough technical and trade education than Americans. "The Americans have no thorough education, nor do they possess a modern industrial system as we Europeans understand the term. The American applies himself to a single branch or to a specialty with

utter disregard of European methods and their results; he devotes to his work an amount of energy which stupefies Europeans, and *for awhile* he succeeds in driving us out of the line of articles on which he has centred his energy." In commenting upon this statement, the Bureau (United States) of Foreign Commerce said: "In the more and more strenuous competition which is evidently waiting us our manufacturers, exporters, and trade representatives abroad will need to be provided with a variety of information which cannot be acquired except by academic instruction. The knowledge gained in the workshop or the counting house will not suffice to meet a rivalry which is seeking to equip itself, so far as it can, with our machinery, our industrial and trade methods—with everything, in short, that now gives us supremacy—and will add to these the mastery of details of trade conditions and industrial processes throughout the world, which we are only beginning to study."

Foreign Commerce Statistics.—The foreign commerce of the United States in 1900 showed a larger increase over the preceding calendar year than 1899 showed over 1898. The increase in imports in 1899 was about \$164,000,000, and the increase in exports about \$20,000,000, making a total increase of \$184,000,000. In 1900 the total increase over 1899 was \$232,623,761; but the imports only increased \$30,173,766, while the exports increased \$202,449,995. The total foreign commerce in 1900 was \$2,306,969,003. Imports from Europe increased by \$39,103,194, and exports to Europe by \$157,165,004. In North America imports increased by \$6,882,272, and exports by \$29,937,005. Exports to Asia increased by \$4,882,619, while imports diminished by \$16,485,700, which was accounted for by smaller exports from the East Indies and Japan. In the trade with South America imports increased by \$10,977,771, and exports by \$3,826,351. Imports from the United Kingdom increased by \$9,245,246, while exports to the kingdom increased by the large amount of \$92,263,040. Imports from Germany increased by \$13,877,215, and exports to Germany increased by \$36,197,548.

In our export trade the most striking fact is the great increase of manufactures, which in 1900 were 30.38 of the total exports, or \$441,406,942. Agricultural products formed 62.26 per cent. of the exports, or \$904,658,958. Forest woods and products were \$54,481,146, or 3.75 per cent., and mining products, \$39,222,902, or 2.70 per cent. The most important single class of exports was cotton and manufactures of cotton, which came to \$314,252,586. Then came breadstuffs, wheat, corn, etc., to the amount of \$250,786,080. Iron and steel and manufactures of them were exported to \$129,633,480. Other large exports were: Agricultural implements, \$15,979,909; animals, cattle, sheep, hogs, horses, etc., \$49,153,012; chemicals, dyes, and medicines, \$13,765,592; coal, \$21,524,079; copper and manufactures of copper, \$57,548,700; leather and manufactures of leather, \$27,169,014; refined oils, \$67,152,208; provisions, meat, lard, dairy products, etc., \$186,568,735; unmanufactured tobacco, \$26,886,372. Our most important article of import was sugar, \$91,742,493, the principal sources being Germany, \$16,675,501; British West Indies, \$5,271,753; Cuba, \$16,852,261; East Indies, \$17,782,280, and Hawaii, \$9,159,332. Other leading imports were coffee, \$59,510,771; cotton and manufactures of cotton, \$42,714,455; fibres and textile grasses, unmanufactured, \$25,752,152; manufactured, \$32,528,378; fruits and nuts, \$18,926,781; hides and skins, \$51,590,433; india-rubber and gutta-percha, unmanufactured, \$28,719,105; iron and steel, \$20,443,908; leather and manufactures of leather, \$13,298,937; manufactures of silk, \$29,719,518; unmanufactured silk, \$32,453,659; tin, mainly from the United Kingdom and the East Indies, \$19,458,586; unmanufactured tobacco, mainly from the Netherlands and Cuba, \$14,867,897; wood and lumber, \$20,156,641; unmanufactured wool, \$19,210,062; manufactured wool, \$15,806,090.

Colonial and Cuban Trade.—Complete returns of the commerce of Cuba, Porto Rico, and the Philippine Islands with the United States were not available for the calendar year 1900. The following table, however, showing the commerce for the fiscal years 1898, 1899, and 1900, exhibits the rapid growth of the commercial relations between the United States and the dependencies.

YEAR ENDING JUNE 30.	CUBA.		PORTO RICO,		PHILIPPINE ISLANDS.	
	Imports.	Exports.*	Imports.	Exports.*	Imports.	Exports.*
1898.....	\$15,222,477	\$9,561,656	\$2,414,856	\$1,505,946	\$3,830,415	\$127,804
1899.....	25,411,410	18,615,707	3,179,827	2,985,848	4,410,774	404,171
1900.....	31,371,704	26,513,613	3,078,415	4,640,431	5,971,208	2,640,449

* Domestic and foreign exports.

See article HAWAII.

United States Foreign Trade by Countries.—The following table, prepared by the Treasury Department, shows the foreign trade of the United States for the calendar year 1900:

COUNTRIES.	Imports from.	Exports to.	COUNTRIES.	Imports from.	Exports to.
<i>Europe.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>South America.</i>	<i>Dollars.</i>	<i>Dollars.</i>
Austria-Hungary.....	10,548,698	7,657,019	Argentina.....	8,098,343	11,095,338
Azores and Madeira Islands.....	24,638	540,663	Bolivia.....	22	130,083
Belgium.....	14,602,542	46,299,953	Brazil.....	64,914,507	11,516,061
Denmark.....	796,736	15,499,371	Chile.....	7,474,061	4,586,525
France.....	72,781,212	82,553,335	Colombia.....	2,080,427	2,605,544
Germany.....	103,456,554	197,603,400	Ecuador.....	1,577,486	1,599,653
Gibraltar.....	38,067	618,415	Falkland Islands.....		461
Greece.....	1,077,504	327,569	Guianas.....		
Greenland, Iceland, etc.....	72,763	50	British.....	4,656,613	1,879,607
Italy.....	27,051,126	36,731,704	Dutch.....	1,391,340	555,736
Malta, Gozo, etc.....	15,040	335,643	French.....	54,212	211,746
Netherlands.....	17,273,111	83,721,501	Paraguay.....	1,740	6,457
Portugal.....	3,349,110	5,705,179	Peru.....	2,916,531	2,311,866
Roumania.....	101,042	31,037	Uruguay.....	2,085,593	1,726,742
Russia, Baltic, etc.....	5,735,228	7,382,314	Venezuela.....	6,529,858	3,016,722
Russia, Black Sea.....	2,161,802	1,116,636			
Servia.....	3,156	369	Total for South America.....	103,706,633	41,948,051
Spain.....	5,538,662	15,200,917	<i>Asia.</i>		
Sweden and Norway.....	4,369,984	11,530,574	Aden.....	1,616,981	651,735
Switzerland.....	17,447,937	297,283	Chinese Empire.....	22,940,397	11,061,146
Turkey in Europe.....	3,598,806	405,217	China.....		
United Kingdom.....	151,506,743	602,221,375	British.....	81	
Total for Europe.....	441,610,461	1,116,399,524	German.....		
<i>North America.</i>			Russian.....		165,280
Bermuda.....	466,545	1,229,304	East Indies.....		
British Honduras.....	185,483	659,374	British.....	43,323,304	5,327,322
Dominion of Canada:			Dutch.....	20,967,990	1,994,958
Nova Scotia, New Brunswick, etc.....	5,791,234	7,046,419	French.....		118,102
Quebec, Ontario, etc.....	26,821,107	88,160,712	Portuguese.....	529	1,084
British Columbia.....	7,699,102	7,693,119	Hong-Kong.....	1,296,771	9,374,239
Total for Dom. of Canada.....	40,311,443	102,900,250	Japan.....	26,315,225	26,422,111
New Foundland and Labrador.....	403,305	1,881,629	Korea.....	740	130,297
Central American States:			Russia, Asiatic.....	1,106	2,768,004
Costa Rica.....	2,959,439	1,688,670	Turkey in Asia.....	3,637,534	217,016
Guatemala.....	2,190,145	1,128,418	All other Asia.....	357,061	282,679
Honduras.....	1,114,466	1,126,832			
Nicaragua.....	1,329,747	1,767,399	Total for Asia.....	120,378,219	58,728,173
Salvador.....	746,936	756,586	<i>Oceania.</i>		
Total for Central American States.....	8,740,733	6,467,905	Auckland, Fiji, etc.....	1,964,541	13,961
Mexico.....	28,179,829	38,270,933	British Australasia.....	5,262,968	23,163,722
Miguelon, Langley, etc.....	51,276	198,355	French Oceania.....	499,532	349,075
West Indies:			German Oceania.....	6,002	49,385
British.....	12,397,536	8,630,347	Spanish Oceania.....	2,364	39,006
Cuba.....	31,747,229	26,934,524	Hawaii*.....	9,253,556	7,474,941
Danish.....	444,050	651,906	Philippine Islands.....	6,095,949	3,523,146
Dutch.....	241,535	631,339	Tonga, Samoa, etc.....	82,736	192,110
French.....	31,463	2,008,756	Total for Oceania.....	23,067,642	39,895,176
Haiti.....	1,357,775	3,720,379	<i>Africa.</i>		
Porto Rico*.....	2,443,995	2,813,821	British Africa.....	1,137,823	19,190,658
Santo Domingo.....	3,228,849	1,782,700	Canary Islands.....	21,070	270,340
Total for West Indies.....	51,892,462	47,173,822	French Africa.....	478,898	225,530
Total for North America.....	130,231,076	198,791,572	German Africa.....		2,757
			Liberia.....	4,351	27,353
			Madagascar.....	495	26,466
			Portuguese Africa.....	4,798	337,361
			Spanish Africa.....	760	13,222
			Turkey in Africa.....	8,734,751	1,525,422
			All other Africa.....	652,395	154,907
			Total for Africa.....	11,025,306	22,973,170
			Grand total for all countries.....	829,019,337	1,477,949,666

* Commerce of the United States with Hawaii and Porto Rico after June 30, 1900, not included, but the trade of Hawaii with foreign countries after that date is included.

Industries.—See MANUFACTURES; IRON AND STEEL; MINING; COTTON AND THE COTTON INDUSTRY; SUGAR; RAILROADS; SHIPBUILDING; SILK MANUFACTURES; WOOL. A discussion of closely correlated subjects will be found under the articles INDUSTRIAL COMMISSION; LABOR; STRIKES AND LOCKOUTS; TRUSTS.

Posts.—The report of the postmaster-general for the fiscal year ending June 30, 1900, showed that the receipts of the post-office department during the year amounted

to \$102,354,579.29, and the expenditures, \$107,740,267.99, leaving a deficit of \$5,385,688.70. As compared with the previous fiscal year, the receipts were greater by seven and one-third millions, and the expenditures by a little over six millions, thus reducing the deficit of 1899 by \$1,225,088. The postmaster-general in his reports of 1899 and 1900 discusses at length the abuse of regulations governing second-class matter by advertisers and others who, circulating "trade journals," "house organs," "sample copies," etc., in serial form, secure the advantage of the rate of one cent a pound, which is far less than the cost of transportation, and was intended only to aid *bona fide* periodicals with actual subscription lists. In 1899 the postal department received \$65,987,732.98 for transmitting 128,517,992 pounds of first-class mail, \$10,093,882.50 for 68,227,169 pounds of third-class matter and \$3,527,032.26 for sending 352,703,226 pounds of second-class matter at the penny-pound rates. At least one-half of this mail matter should have gone second class. The average cost to the government was 14.75 cents per pound. If one-half of this class of matter had been compelled to pay second-class rates, there would have been a surplus instead of a deficit. In his report for 1900, the postmaster-general stated that the "sample-copy" and "bulk-subscription" abuses had been abated, but that "the most burdensome and objectionable evils" remained. He therefore urged upon Congress "the enactment of a measure directed against the grosser wrongs that are acknowledged on all sides." Free delivery was tried during the year in an increased number of rural districts. The postmaster-general stated that he believed it was feasible to extend free delivery advantageously over about 1,000,000 square miles of territory, inhabited by 21,000,000 people.

Navigation.—The introduction in Congress of the Ship Subsidy bill has aroused interest in the United States merchant marine. This service was loosely said to be insignificant in amount, being less than that of any other great power. But the statement is true only when applied to the United States foreign trade. For the fiscal year 1841, American vessels carried 88.5 per cent. of the country's imports and 77.8 per cent. of the exports. For the year ending June 30, 1900, 12.9 per cent. of the imports and 7.1 per cent. of the exports, or 9.3 of the foreign commerce, was carried in American ships. The decline of American foreign shipping began at the time of the Civil War, when, during the four years 1862-65, inclusive, vessels to a tonnage of 774,652 were sold to foreigners. Since then, and until at least 1890, iron and steel were produced more cheaply in Great Britain than in America, and the tariff practically debarred their importation. At the present time steel can be produced at less cost in the United States than elsewhere; but the extra cost of operating ships under the American flag, and the fact that the coasting trade is absolutely protected from foreign competition, has led shipping interests to avoid the foreign trade. The revival of foreign shipping depends, of course, upon whether it can be made to pay the rate of interest prevailing in other industries. This in turn depends upon (1) cost of construction and (2) cost of operation. As to the latter factor there seems little reason to believe that American ships can in the near future be operated as cheaply as foreign ones. Sixty-four steamships aggregating 336,195 tons are owned by American capital, but sail under foreign flags, as the cost of operation is much less. At present, according to the testimony of eminent ship-builders, vessels built here cost from 15 to 25 per cent. more than those built abroad. Again, assert the builders, some means must be found to keep fairly uniform the price of steel, which has been known to vary 250 per cent. within four months. The steel producers might absorb the shipping plants, or the shipping plants should engage in steel production for themselves. Notwithstanding the difficulties of ship-builders, the year 1900 showed an improvement in the trade.

The following table prepared by the Commissioner of Navigation shows the geographical distribution, motive power and material of construction, and trade of vessels of the United States for the fiscal years, ending June 30, 1899 and 1900, and also the construction for those two years.

GEOGRAPHICAL DISTRIBUTION.	1899.		1900.	
	Number.	Gross tons.	Number.	Gross tons.
Atlantic and Gulf coasts.....	16,275	2,614,869	16,532	2,727,592
Pacific coast.....	1,970	589,937	2,203	601,212
Hawaiian Islands.....			14	11,692
Northern lakes.....	3,162	1,446,848	3,167	1,665,587
Western rivers.....	1,321	263,084	1,417	258,456
Total.....	22,728	4,964,238	23,333	5,164,839

	1899.		1900.	
	<i>Number.</i>	<i>Gross tons.</i>	<i>Number.</i>	<i>Gross tons.</i>
POWER AND MATERIAL.				
Sail: (a)				
Wood	15,171	2,214,540	16,159	2,280,200
Iron and steel	120	173,687	141	205,000
Total	15,291	2,388,227	16,280	2,485,200
Steam:				
Wood	5,824	1,274,056	5,909	1,281,619
Iron and steel	1,013	1,201,955	1,084	1,375,360
Total	6,837	2,476,011	7,053	2,657,779
Canal boats	629	71,101	647	73,288
Barges	1,962	491,808	2,362	548,817
Total	2,591	562,909	3,009	622,390
TRADE.				
Registered:				
Steam, iron and steel	135	268,818	124	271,573
Steam, wood	282	71,217	214	60,064
Sail (b), wood and iron, and steel	964	498,216	992	485,252
Total	1,331	848,246	1,330	826,894
Enrolled and licensed:				
Steam, iron and steel	878	913,142	900	1,104,007
Steam, wood	5,569	1,202,839	5,755	1,217,548
Sail (a), wood and iron, and steel	14,927	1,900,011	15,288	2,021,000
Total	21,307	4,015,992	22,008	4,336,145
CONSTRUCTION DURING THE YEAR.				
<i>Geographical distribution.</i>				
Atlantic and Gulf coasts	681	154,596	604	207,628
Pacific coast	306	41,534	303	41,354
Northern lakes	129	80,866	125	130,611
Western rivers	214	22,558	215	14,173
Total	1,273	300,038	1,447	398,790
<i>Power and material.</i>				
Sail:				
Wood	413	72,535	494	87,357
Steel	7	25,538	10	26,908
Steam:				
Wood	850	48,040	848	34,850
Iron and steel	80	108,018	80	167,948
Canal boats	13	1,411	38	4,492
Barges:				
Wood	307	46,673	463	70,310
Steel	4	2,823		
Total	1,273	300,038	1,447	398,790

a Including canal boats and barges.

b Including barges.

See SHIP-BUILDING.

Ship Subsidy Bill.—On December 6, 1899, a Ship Subsidy bill was introduced into the Senate by Senator Frye "to promote the commerce and increase the foreign trade of the United States, and to provide auxiliary cruisers, transports and seamen for government use when necessary." This bill, whose main provisions are given in the succeeding paragraph, provoked both in its original and amended form a large amount of discussion throughout the country. The advocates of the bill stated that the proposed act, offering subsidies to American vessels engaged in foreign trade, was vitally necessary to build up the United States mercantile marine. They stated that some \$150,000,000 was given annually to foreigners to carry American merchandise; that all other great countries had found it necessary to offer ship subsidies; that the United States mercantile marine (see UNITED STATES, paragraph Navigation) was smaller in proportion than that of any other country in the world; and, finally, that the Spanish War had proved the necessity of having vessels which the United States could use as transports in case of war. The opponents of the bill, on the other hand, noted that subsidies previously given by the United States, notably the Collins Line, had resulted only in disaster; that if shipbuilders preferred to invest their capital in the protected coasting trade of the United States



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FOUR PROMINENT CONGRESSMEN.—1. Senator Mark Hanna. 2. Senator W. P. Frye.

3. Senator Benjamin Tillman. 4. Rep. Joseph W. Bailey.

rather than in the open foreign trade, that was no reason why the government should step in and protect the foreign trade as well. In regard to transports the opponents of the measure said that in case of war the United States could always get transports by paying for them, and that since no amount of money was fixed by the bill on receipt of which the transportation companies would be obliged to turn over their vessels to the government, the United States would be practically no better off with the bill enacted than without it. Finally, it was said that of the \$9,000,000 proposed to be spent annually for ship subsidies, the greater amount would go to the great transportation companies which already had vessels, and would help but very little the small and tentative lines which it was really desirable to build up. In answer to these criticisms, amendments were introduced in the Ship Subsidy bill providing, among other things, for relatively larger subsidies to small cargo vessels and providing further that not more than \$2,000,000 annually out of the total \$9,000,000 should be paid to vessels of over 10,000 gross tons' capacity. Nevertheless, so much opposition developed that, partly because it was deemed doubtful whether the bill could be passed, and partly because of the impending presidential election, it was left pending at the end of the session.

Provisions of the Ship Subsidy Bill.—The main provisions of the bill were as follows: All vessels owned in the United States and engaged in the foreign trade were to receive a bounty for a period of 20 years, beginning July 1, 1900, in accordance with the following conditions:

On each entry of a sail or steam vessel, not exceeding 16 entries in any 12 consecutive months, 1.5 cents per gross ton for each 100 nautical miles up to 1500 miles, and one cent per gross ton for each additional 100 miles. Steam vessels suitable for carrying the United States mails, and to be used as auxiliaries in case of war, to receive additional compensation in accordance with their speed and tonnage. Vessels of over 1,500 gross tons, with a speed ranging from 14 to 15 knots, one cent per gross ton for each 100 nautical miles; between 15 and 16 knots, 1.1 cents per gross ton; 16 knots and over, 1.2 cents per each gross ton. Vessels over 3000 gross tons and a speed of from 17 to 18 knots, 1.4 cents per gross ton; between 18 and 19 knots, 1.6 cents; 19 knots and over, 1.8 cents per gross ton. Vessels over 8000 gross tons and a speed from 20 to 21 knots, 2 cents per gross ton; 21 knots and over, 2.3 cents per gross ton. The total amount of compensation paid out in any single year was not to exceed \$9,000,000. Foreign-built vessels of American registry were to receive only one-half rates.

A very important provision of the bill was that authorizing the secretary of the treasury to extend the benefits of the act to all those persons or corporations who should construct in the United States one or several vessels in compliance with any of the above-mentioned conditions. Foreign-built vessels engaged in the United States foreign trade on January 1, 1899, and 80 per cent. of whose value was owned on that date by United States citizens, were entitled to the full benefit of the act, provided the vessels be formally transferred to those citizens of the United States. A bounty was also to be granted on vessels in the process of construction on January 1, 1899, in any foreign country for citizens of the United States. The United States mails were to be carried free by any vessel receiving a compensation from the United States government. The bill also authorized the United States government to take over or employ as a transport, in case of need, any of the vessels in receipt of a subsidy, after a fair price had been paid to their owners.

The amendments adopted during the first session of the 56th Congress were as follows: The period of the compensation was to be reduced from 20 to 10 years in case of vessels completed and in existence on January 1, 1900. Full compensation was to be paid only on those vessels whose cargo should amount to at least 50 per cent. of their gross tonnage, after the space usually devoted to the carriage of mails and passengers had been deducted. Perhaps the most important amendment adopted was that raising the tonnage of the vessels entitled to compensation from 1500 tons to 2000 tons and reducing the rate of speed demanded from 14 to 12 knots, the vessels with a speed ranging from 12 to 14 knots to be paid 0.5 cents per gross ton for every 100 nautical miles. The importance of this amendment arises chiefly from the fact that it includes vessels which are commonly devoted to freight traffic and carry the products of the United States abroad. Another amendment of much importance was that stipulating that no more than \$2,000,000 of the total sum of \$9,000,000 should be paid to vessels of over 10,000 gross tons capacity and a speed of 20 knots and over, and no more than 70 per cent. of the total sum to vessels engaged in the Atlantic Ocean trade.

Army.—In his annual message of December, 1900, the President emphasized the need of providing by legislation for a permanent increase in the size of the army. The President stated that in accordance with existing law the present army of 100,-

ooo men would have to be reduced by June 30, 1901, to 2447 officers and 29,025 enlisted men. But in the Philippines alone from 45,000 to 60,000 men would be required "for the immediate future." In Cuba the force of from 5000 to 6000 could not well be reduced, nor could the Porto Rico force of 1636 (including 879 native soldiers). Forts and guns in the United States required for their care at least 18,420 men, and military posts needed 26,000 more. The President recommended, therefore, that a regular army of 60,000 be established, with authority given to the President to temporarily increase this number to 100,000. On February 19 Elihu Root, secretary of war, submitted to the House Committee on Military Affairs the draft of a bill providing for radical alterations in the military system. In brief the bill proposed: (1) That one-third of the promotions in the line to the rank of major, lieutenant-colonel or colonel should be made by a board appointed for that purpose upon the basis of merit and not upon the basis of seniority; (2) that the President should be empowered to retire in his discretion and with the consent of the Senate the heads of staff departments now holding permanent office; (3) that permanent subordinate staff positions be in the main done away with, and that instead detail appointments for four years each should be made from the line; (4) that the artillery should be materially increased over its present proportion to the cavalry and infantry forces, that a battalion formation should be substituted for the present regimental formation of artillery, and that a chief of artillery be appointed whose special business it should be to look after the efficiency and progress of this branch of the service. In explaining the need for these changes Secretary Root said: (1) The section providing for promotion was intended to encourage ambition in the army, and to reward exceptional ability, devotion to duty, and conspicuous gallantry, and gradually to bring the most competent officers into positions of command; (2) that the President as commander-in-chief is responsible for the efficiency of the army. In time of war he can change commanding generals as often as he chooses, but he is, as the law now stands, absolutely powerless to remove the heads of these great departments which organize and assemble, feed, clothe, transport, arm, and equip the army, and organize victory or defeat before a shot is fired. This section therefore gives him a needed power; that (3) heretofore there has been a feeling in the line that all the influence and prestige in the army has been given to the permanent staff officers. The section providing for transference from the line to the staff and back again will break down this feeling, create a larger body of men competent in every branch of the service, and be fairer to every one concerned; that (4) the section relating to artillery provides for an increase of about 6500 men, to be taken in recruiting from the other arms of the service. To the bill as thus advocated there were immediate and sustained objections. The staff at Washington protested against any changes in their departments, while many of the line officers felt that promotions for merit would in practice entail favoritism and unfair discrimination. Nevertheless, the bill in emasculated form passed the Senate on May 24. The House, however, refused to bring it to a vote before the next session of Congress, presumably because it was thought that, in view of the Democratic "anti-imperialistic" attitude and the approaching national election, measures of war had been for the time quite sufficiently discussed. When Congress adjourned it seemed probable that the artillery section of the bill would be passed the following year, but that the effort to dislodge the staff from its intrenched position would prove futile. In accordance with the recommendation of the secretary of war Congress passed bills promoting General Miles to be a lieutenant-general, and General Corbin a major-general, and providing for 100 more cadets at the West Point Military Academy.

Navy.—During 1900 the battle-ships *Alabama*, *Kearsarge*, and *Kentucky*, the protected cruiser *Albany*, and the torpedo boats *Craven* and *Dahlgren* were accepted by the Navy Department. Other vessels added to the navy were the *Aravat*, *General Alava*, *Holland*, *Quiros*, and *Villabolas*. Forty-eight vessels in all were under construction at the time of the secretary's report. The total tonnage under construction in the United States and in foreign countries is shown in the subjoined table:

NATION.	Battleships.	Cruisers.	Torpedo vessels.	Total.
England.....	254,800	235,750	12,950	502,700
France.....	21,680	143,580	3,300	168,510
Germany.....	111,000	82,500	2,800	196,300
Italy.....	75,000	46,800	1,360	123,160
Japan.....	30,400	17,400	2,240	50,040
Russia.....	150,220	102,650	10,850	263,720
United States.....	38,900	19,200	8,700	.....
Monitors.....	12,940	.....	.....	77,740

In his annual report for 1900 the secretary of the navy stated that an increase of not less than 5000 enlisted men would soon be required. He pointed out that, in accordance with the holding of the Department of the Treasury, Porto Rico, the Hawaiian Islands, Guam, and the Philippines were not considered "beyond seas," within the meaning of the statute which provided that naval officers detailed for shore duty beyond seas should receive the same pay as army officers there detailed. Legislation to place the army and navy on the same footing in this respect was recommended.

The secretary stated that the functions of the Bureaus of Construction and Repair, Steam Engineering and Equipment were found in practice to overlap each other, and recommended that the departments be consolidated.

A dry dock capable of accommodating the largest battle-ships was recommended for the Philippine Islands. The 10,000-ton steel floating dry dock at Havana, Cuba, has been offered by Spain, and a commission was appointed in 1900 to make a final report upon the advisability of purchasing it. The survey for a trans-Pacific, submarine telegraph cable was completed during 1900, and showed the existence of a satisfactory route between the United States and the possessions of the United States in the Pacific. In reference to the existing system of promotion by numbers, whereby officers not promoted have been relegated to a lower rank, the secretary recommended that promotion be made hereafter by medals as follows: (1) An honor medal presented by the President for eminent conduct in battle; (2) courage medal presented by the secretary of the navy for distinguished courage in the presence of the enemy or extraordinary heroism at any time; (3) a service medal presented by the secretary of the navy for distinguished public service in time of war.

For the armament and armor of vessels authorized between 1895 and 1900 inclusive, the secretary of the navy was directed by Congress "to procure by contract armor of the best quality—provided such contracts can be made at a price which in his judgment is reasonable and equitable, but in case he is unable to make contracts for armor under the above conditions he is hereby authorized and directed to procure a site for and erect thereon a factory for the manufacture of armor, and the sum of \$4,000,000 is hereby appropriated toward the erection of said factory." The secretary was also authorized to contract for two sea-going battle-ships, and 3 armored cruisers, to have the heaviest armor, most powerful ordnance, and greatest radius of action for vessels of their respective classes, and to cost, exclusive of armor and armament, not more than \$3,600,000 each for the battle-ships, and not more than \$4,250,000 each for the cruisers. The secretary was further authorized to contract for three protected cruisers, of about 8000 tons displacement each, and for five submarine torpedo boats of the Holland type of the most improved design.

Census, Immigration, Pensions, Railways, and Lands, Public.—See the special articles on those subjects.

Diplomatic Service.—Several important changes were made during the year in the diplomatic service. On December 11, 1900, the President nominated George Von L. Meyer, of Massachusetts, ambassador to Italy to succeed William F. Draper, resigned. On December 18 the President nominated John C. A. Leishman, of Pennsylvania, minister to Switzerland, to be minister to Turkey in place of Oscar S. Strauss, resigned. On the same date the President nominated Arthur S. Hardy, of New Hampshire, minister to Greece, Roumania, and Serbia, to be minister to Switzerland, and Charles S. Francis, of New York, to be minister to Greece, Roumania, and Serbia. The following table shows the accredited diplomatic representatives of the United States at foreign courts at the end of the year, and also the representatives of foreign nations accredited at Washington on November 27, 1900:

COUNTRY.	AMBASSADORS.			
	Accredited to the United States.	Accredited by the United States.	Appointed from	Year of appointment.
France.....	M. Jules Cambon.....	Horace Porter.....	New York..	1897
Germany.....	Herr Von Holleben.....	Andrew D. White.....	New York..	1897
Great Britain.....	Rt. Hon. Lord Pauncefote.....	Joseph H. Choate.....	New York..	1899
Italy.....	Baron de Fava.....	George von L. Meyer.....	Mass.....	1900
Mexico.....	Señor Manuel de Azpiroz.....	Powell Clayton.....	Arkansas...	1897
Russia.....	Comte Cassini.....	Charlemagne Tower....	Penn'svania	1899
MINISTERS PLENIPOTENTIARY OR MINISTERS RESIDENT.				
Argentine Republic.....	Dr. Eduardo Wilde.....	William P. Lord.....	Oregon.....	1899
Austria-Hungary.....	Mr. L. H. von Hengervár.....	Addison C. Harris.....	Indiana.....	1899
Belgium.....	Count G. de Lichtervelde.....	Lawrence Townsend.....	Penn.....	1899
Bolivia.....	Señor Don F. E. Guachalla.....	George H. Bridgman.....	New Jersey	1897

COUNTRY.	MINISTERS PLENIPOTENTIARY OR MINISTERS RESIDENT.			
	Accredited to the United States.	Accredited by the United States.	Appointed from	Year of appointment.
Brazil.....	Mr. J. F. de Assis-Brasil.....	Charles Page Bryan.....	Illinois.....	1898
Chile.....	Señor Don Carlos Morla Vicuña.....	Henry L. Wilson.....	Washington.....	1897
China.....	Mr. Wu Ting Fang.....	Edwin H. Conger.....	Iowa.....	1898
Colombia.....	Señor Dr. Luis Cuervo Márquez*.....	Charles B. Hart.....	W. Virginia.....	1897
Costa Rica.....	Señor Don J. Bernardo Calvo.....	William L. Merry.....	California.....	1897
Denmark.....	Mr. Constantin Brun.....	Laurits S. Swenson.....	Minnesota.....	1897
Dominican Republic.....	Señor Don Emilio C. Joubert*.....	William F. Powell*.....	New Jersey.....	1897
Ecuador.....	Señor Don Luis Felipe Carbo.....	Archibald J. Sampson.....	Arizona.....	1897
Greece, Serbia, and Roumania.....		Charles S. Francis.....	New York.....	1900
Guatemala and Honduras.....	Señor Don Antonio Lazo Arriaga.....	W. Godfrey Hunter.....	Kentucky.....	1897
Haiti.....	Mr. J. N. Léger.....	William F. Powell.....	New Jersey.....	1897
Japan.....	Mr. Kogoro Takahira.....	Alfred E. Buck.....	Georgia.....	1897
Korea.....	Mr. Chin Pom Ye.....	Horace N. Allen.....	Ohio.....	1897
Liberia.....		Owen L. W. Smith.....	N. Carolina.....	1898
Netherlands.....	Baron W. A. F. Gevers.....	Stanford Newel.....	Minnesota.....	1897
Nicaragua.....	Señor Don Luis F. Corea.....	William L. Merry.....	California.....	1897
Paraguay.....		William R. Finch.....	Wisconsin.....	1897
Peru.....		Herbert W. Bowen.....	New York.....	1899
Portugal.....	M. Manuel Alvarez Calderon.....	Irving B. Dudley.....	California.....	1897
Salvador.....	Viscount de Santo-Thyrso.....	John N. Irwin.....	Iowa.....	1899
Siam.....	Señor Don Rafael Zaldivar.....	William L. Merry.....	California.....	1897
Spain.....	Phya Prashiddhi.....	Hamilton King.....	Michigan.....	1898
Sweden and Norway.....	Duke de Arcos.....	Bellamy Storer.....	Ohio.....	1899
Switzerland.....	Mr. A. Grip.....	William W. Thomas, Jr.....	Maine.....	1897
Turkey.....	Mr. J. B. Pioda.....	Arthur S. Hardy.....	N. Hampshire.....	1900
Uruguay.....	All Ferrouh Bey.....	John C. A. Lelshman.....	Pennsylvania.....	1900
Venezuela.....	Señor Dr. Don Juan Cuestas.....	William R. Finch.....	Wisconsin.....	1897
	Señor Don Augusto F. Pulido*.....	Francis B. Loomis.....	Ohio.....	1897

* Chargé d'Affaires.

Revenue and Expenditure.—The revenue of the government for the fiscal year ending June 30, 1900, was \$669,595,431.18 (nearly \$30,000,000 more than the estimate), and the expenditure was \$590,068,371 (about \$10,000,000 less than the estimate), thus showing a surplus of \$79,527,060.18. The largest sources of income were, from internal revenue, \$295,327,926.76; from customs, \$233,164,871.16, and from postal service, \$102,354,579.29. The main items of expenditure for the same period were: For the civil establishment, \$98,542,411.37; for the military establishment, including the national defence and expenses of the war with Spain and in the Philippines, \$134,774,767.78; for the naval establishment, including construction, armament, the national defence, and expenses of the war with Spain and in the Philippines, \$55,953,077.72; for pensions and the pension service, \$140,877,316.02; for interest on the public debt, \$40,160,333.27; for the postal service, \$109,585,358.08. As compared with the fiscal year 1899, the receipts for 1900 increased by \$58,613,426.83, and the expenditures diminished by \$117,358,388.14. The main items of increased revenue for 1900 were: An increase from internal revenue, \$21,890,765.25; from customs, \$27,036,389.41; from postal service, \$7,333,195.12. The main items of decreased expenditure for 1900 were: Decrease in expenditure for the civil establishment, \$13,418,065.74; for the military establishment, \$95,066,486.69; for the naval establishment, \$7,989,026.53. The surplus was to a large extent due to the marked prosperity of the country as shown in the increase of nearly every industry, and to the large increase in foreign commerce. For the fiscal year 1901 the secretary in his report for 1900 estimated the revenues and expenditures, as based upon the laws in force at that time at \$687,773,253.92 and \$607,773,253.92 respectively, the surplus being \$80,000,000.

From customs.....	\$245,000,000.00
From internal revenue.....	300,000,000.00
From miscellaneous sources.....	35,000,000.00
From Postal Service.....	107,773,253.92

Total estimated revenues.....\$687,773,253.92

The expenditures for the same period are estimated as follows:

For the civil establishment.....	\$115,000,000.00
For the military establishment.....	140,000,000.00
For the naval establishment.....	60,000,000.00
For the Indian Service.....	11,000,000.00
For pensions.....	142,000,000.00
For interest on the public debt.....	32,000,000.00
For Postal Service.....	107,773,253.92

Total estimated expenditures.....607,773,253.92

Or a surplus of.....80,000,000.00

For the fiscal year 1902 the secretary estimated that there would be a surplus of \$26,000,000.00. The secretary pointed out, however, that such estimates were at the best approximate. Extraordinary congressional appropriations, or unforeseen exigencies in the public service, or failure to realize fully upon estimated revenues should all be duly considered by Congress, to the end that an annual excess of revenues and expenditures might maintain the public credit unimpaired. Moreover, it had been the consistent policy of the government to regularly reduce the public debt, and though, owing to annual deficits in the treasury, this process had been suspended from 1894 to 1899 inclusive, a sufficient margin of receipts over expenditures should be allowed in the future to regularly continue it. In view of all these circumstances the secretary recommended to Congress such a reduction of the war taxes as would reduce the public revenue by not more than \$30,000,000 yearly.

The National Debt.—The amount and classification of the public debt on December 31, 1900, was as follows:

Interest-bearing debt.....	\$1,001,499,770.00
Debt on which interest has ceased since maturity.....	2,654,070.26
Debt bearing no interest—United States notes, etc.....	385,144,806.41
Aggregate of interest and non-interest-bearing debt.....	\$1,389,298,646.67
Certificates and treasury notes offset by an equal amount of cash in the treasury.....	754,012,379.00

Aggregate of debt, including certificates and treasury notes.....\$2,143,311,025.67

At the same time the amount of cash in the treasury was as follows:

CLASSIFICATION.	Dollars.	Dollars.
Reserve fund:		
Gold, coin and bullion.....		150,000,000.00
Trust funds:		
Gold coin.....	263,629,379.00	
Silver dollars and bullion.....	427,426,000.00	
United States notes.....	1,560,000.00	
		754,012,379.00
General fund:		
Gold coin and bullion.....	65,719,871.95	
Silver coin and bullion.....	9,389,960.50	
Minor coin and fractional currency.....	448,777.45	
Gold certificates.....	30,841,450.00	
Silver certificates.....	5,026,507.00	
Currency certificates.....	30,000.00	
United States notes.....	10,533,521.00	
Treasury notes of 1890.....	166,841.00	
National Bank notes.....	7,952,649.48	
Bonds and interest paid, awaiting reimbursement.....	449,810.39	
Deposits in National Bank depositaries—		
General account.....	89,909,745.62	
Disbursing officers' balances.....	6,789,948.73	
		227,259,173.12
Total		1,131,271,552.12

DEMAND LIABILITIES.	Dollars.	Dollars.
Gold certificates.....	263,629,379.00	
Silver certificates.....	427,426,000.00	
Currency certificates.....	1,560,000.00	
Treasury notes of 1890.....	61,397,000.00	
		754,012,379.00
National Bank 5 per cent. fund.....	14,141,391.83	
Outstanding checks and drafts.....	5,781,008.11	
Disbursing officers' balances.....	57,174,811.74	
Post-Office Department account.....	7,276,379.41	
Miscellaneous items.....	2,770,245.72	
		87,151,836.81
Reserve fund	150,000,000.00	
Available cash balance	140,107,336.81	
		290,107,336.81
Total		1,131,271,552.12

Refunding Operations.—Under the congressional act of March 14, 1900 (see CURRENCY REFORM) the secretary of the treasury was authorized to exchange outstanding

3, 4, and 5 per cent. United States bonds for 2 per cent. thirty-year bonds, payable principal and interest in gold. In pursuance of this provision the secretary received up to and including November 15, 1900, \$352,083,450 of the three classes of bonds in question, and exchanged therefor an equal amount of 2 per cent. bonds. The premium paid for the bonds received for exchange, the saving in interest effected by the exchange, and the net saving to the government resulting from the entire operation are shown in the following table:

CLASS OF BONDS.	Amount refunded.	Saving in interest.	Premium paid.	Net saving.
Loan of 1908-1918 (3 per cent.)	\$79,783,900	\$6,590,070	\$4,499,055	\$2,091,015
Funded loan of 1907 (4 per cent.)	213,221,900	30,458,364	24,545,744	5,912,620
Loan of 1904 (5 per cent.)	60,077,650	6,701,684	5,877,207	824,417
Total	\$352,083,450	\$43,750,058	\$34,922,006	\$8,828,052

The \$34,922,006 represented in this table under "premium paid," was, in effect, an anticipatory payment of interest which, if paid when due, would have amounted to \$43,750,058; so that, as shown in the table, a net saving of \$8,828,052 was effected. Of the \$352,083,450 of bonds exchanged, \$272,779,100 was held by the treasurer of the United States on November 15 as security for circulating notes of national banks, and \$52,565,350 was held as security for public deposits in national banks. As a result of this refunding process the following amounts of 3, 4, and 5 per cent. bonds which could have been exchanged were, on November 15, the total amount which had not been so exchanged:

Of the 5 per cent. loan of 1904	\$34,932,050
Of the 4 per cent. loan of 1907	333,125,700
Of the 3 per cent. loan of 1908-18	119,008,740
Total	\$487,066,490

Currency.—Discussions of currency and banking questions will be found under the articles CURRENCY REFORM and BANKS—BANKING. For the production of gold and silver in the United States, see the articles GOLD and SILVER. The imports of gold for the calendar year 1900 amounted to \$66,745,244, and the exports to \$54,134,623, giving an excess of imports of \$12,610,621. For the calendar year 1899 the imports were \$51,334,964, and the exports, \$45,379,411, giving an excess of imports of \$5,955,553. The imports of silver for 1900 were \$39,780,105, and the exports were \$66,221,664, giving an excess of exports of \$26,441,559. For 1899 the imports were \$30,843,929 and the exports, \$53,461,737, giving an excess of exports of \$22,617,808. The following table shows in detail the coinage of the United States for the year ending December 31, 1900, and shows also by classes the coinage for the previous year, so that comparison may be made. The total coinage in each year is also given:

DENOMINATIONS.	Pieces.	Value.
Gold:		
Double eagles	4,334,064	\$86,681,080.00
Eagles	374,960	3,749,600.00
Half eagles	1,734,780	8,673,650.00
Quarter eagles	67,905	168,012.50
Total gold in 1900	6,510,979	\$99,272,942.50
Total gold in 1899		\$108,177,180.00
Silver:		
Standard dollars	24,960,912	\$24,960,912.00
Subsidiary		
Half dollars	10,067,234	\$5,033,617.00
Quarter dollars	15,291,497	3,822,874.25
Dimes	24,779,182	2,477,918.30
Total subsidiary	50,137,913	\$11,334,409.45
Total silver in 1900	75,098,825	\$36,295,321.45
Total silver in 1899		\$27,721,586.65
Five cent nickels	27,255,905	1,362,799.75
One cent bronze	66,838,764	668,387.64
Total minor in 1900	94,094,759	\$2,031,187.39
Total minor in 1899		\$966,910.14
Total coinage in 1900	175,692,563	\$137,699,401.34
Total coinage in 1899		\$136,855,676.79

The following table shows the amounts of gold and silver coin, certificates, United States notes and national bank notes in circulation and in the treasury on December 31, 1900:

	General stock of money in the U. S.	In Treasury.*	Amount in circulation.
Gold coin (including bullion in Treasury)	\$1,108,541,829	\$246,561,323	\$629,192,578
Gold certificates †			232,787,929
Standard silver dollars	504,890,508	6,108,779	76,192,326
Silver certificates †			422,399,408
Subsidiary silver	87,569,473	4,446,010	83,123,463
Treasury notes of 1890	61,397,000	166,841	61,230,159
United States notes	246,661,016	10,533,531	384,587,495
Currency certificates, act of 1872 †			1,560,000
National-bank notes	240,141,175	7,952,649	332,188,526
Total	\$2,449,021,001	\$375,769,122	\$2,173,251,879

* Not including deposits of U. S. money in national banks.

† For redemption of certificates an equivalent in cash is held in the Treasury.

Banks.—On December 13, 1900, there were 3942 national banks, whose total resources were \$5,142,089,693. See the article BANKS—BANKING.

Congress.—The first session of the 56th Congress opened on December 5, 1899. In his annual message, President McKinley recommended, both as a source of profit and as a means of national defence in case of war, that Congress devise legislation to build up the merchant marine (see paragraph Navigation) for America's foreign trade. "The expense," he said, "is as nothing compared to the advantage to be achieved." The President also urged legislation to curb the power of trusts (see paragraph The Trust Problem), to provide a form of government for Hawaii (*q.v.*) and Porto Rico (*q.v.*), and to pass a Currency Reform (*q.v.*) bill. A modification of the existing Pension law (see article PENSIONS) was passed in accordance with President McKinley's recommendation, so as to extend, as "a simple act of justice," pensions to widows of soldiers of the Civil War whose independent income was less than \$250 per annum, instead of less than \$96 as heretofore. In reference to the Philippines, President McKinley said: "It does not seem desirable that I should recommend at this time a specific and final form of government for these islands. When peace shall be restored it will be the duty of Congress to construct a plan of government which shall establish and maintain freedom and order and peace in the Philippines." Constitutionally considered, this session of Congress was the most important of any since the days of reconstruction. For a territorial form of government was provided for Hawaii, a civil code for Alaska (*q.v.*) and a form of civil government for Porto Rico, whose provisions it was left to the Supreme Court to interpret in terms of the Constitution. These three measures together with the Currency Reform bill were the most considerable acts passed by the Congress. The question as to the rights to their seats of Mr. Roberts (see article UTAH, paragraph Roberts's Debarment from Congress), in the House, and Messrs. Clark (see article MONTANA, paragraph Clark and the Montana Senatorship) and Quay (see article PENNSYLVANIA, paragraph Quay, Matthew S.), in the Senate, consumed considerable time, both on account of the evidence taken in the two former; and on account of the constitutional issues involved in all three. They were decided in the negative. Among important measures which were discussed in Congress, but failed of passage, were the Ship Subsidy bill (see paragraph Navigation), the Army Reorganization bill (see paragraph Army), a bill providing for the laying of a cable to Hawaii and the Philippines, a bill amending the Sherman Anti-Trust law and a resolution proposing a constitutional amendment, under which senators should be elected by popular vote. No attempt was made by Congress to formulate a form of government for the Philippine Islands (see articles COLONIES and PHILIPPINES), nor was any bill passed authorizing the President temporarily to carry on civil government there. The laying over until the following session of certain of these measures was generally considered to be on account of the approaching national election. The Republicans could hardly have bettered their political position by passing a ship subsidy, army reorganization, or Philippine government bill, or by bringing up and defeating or emasculating in the Senate an anti-trust bill. The long-debated armor question was settled by Congress for the time being, by authorizing the secretary of the navy to contract for armor if he considered the terms offered reasonable, and if not to erect a government armor factory (see paragraph Navy). The Hay-Pauncefote treaty (see article NICARAGUA CANAL), abrogating certain sections of the Clayton-Bulwer Treaty had not been ratified by the Senate when Congress adjourned. The Samoan

claims treaty was ratified by the Senate on February 21. Congress adjourned on June 7.

Cabinet.—There were no changes in the cabinet during 1900. It was understood, however, that the attorney-general, John W. Griggs, would resign at the beginning of President McKinley's second term of office, and practise law in New York. The cabinet officers were as follows: Secretary of state, John Hay, of Ohio; secretary of the treasury, Lyman J. Gage, of Illinois; secretary of war, Elihu Root, of New York; attorney-general, John W. Griggs, of New Jersey; postmaster-general, Charles Emory Smith, of Pennsylvania; secretary of the navy, John D. Long, of Massachusetts; secretary of the interior, Ethan Allen Hitchcock, of Missouri; and secretary of agriculture, James Wilson, of Iowa.

Foreign Relations in Regard to China.—While the United States acted in the main in concert with the Powers during the troubles in China (see CHINESE EMPIRE) individual action was taken in several important instances. When the allied fleets shelled and seized the Chinese forts at Taku on June 17, Admiral Kempff refused, without direct authorization from Washington, to "initiate any act of war" against the Chinese Empire, and the American forces, therefore, did not take part in the engagement. On June 20, Baron von Ketteler, the German minister to China, was murdered, and for five weeks after that the legations at Peking were entirely cut off from communication with the outside world. On July 11, Wu Ting Fang, the Chinese minister at Washington, presented a despatch from the imperial government at Peking, denying the responsibility of that government in the outrages that had taken place. Secretary Hay then informed Minister Wu that since, at the pleasure of the Chinese government, despatches could come from Peking, so, if the government pleased, they could also go to Peking. And the secretary handed the minister a cipher despatch for Mr. Conger, the American minister at Peking, with the intimation that if an answer was not received from Mr. Conger the United States would conclude that he had been murdered. Nine days later a message from Mr. Conger was received, which read: "For one month we have been besieged in British Legation under continued shot and shell from Chinese troops. Quick relief only can prevent general massacre." The allied forces, who were waiting indefinitely at Tientsin for reinforcements, were then ordered to proceed within the week to Peking. On July 3, the state department issued, for the instruction of the foreign Powers, a statement of the Chinese policy which the United States intended to pursue, and to this policy the Powers addressed gave a more or less definite adherence, especially Russia, whose real purposes were most in doubt. This statement was so important, not only in view of events immediately subsequent, but in consideration of the whole Eastern problem, whose solution must be a matter of many years, that it is here quoted, practically entire.

"We adhere to the policy initiated by us in 1857 of peace with the Chinese nation, of furtherance of lawful commerce and of protection of lives and property of our citizens by all means guaranteed under extra-territorial treaty rights and by the law of nations. If wrong be done to our citizens we propose to hold the responsible authors to the uttermost accountability.

"We regard the situation at Peking as one of virtual anarchy, whereby power and responsibility are practically devolved upon the local provincial authorities. So long as they are not in overt collusion with rebellion and use their power to protect foreign life and property, we regard them as representing the Chinese people, with whom we seek to remain in peace and friendship. The purpose of the President is, as it has been heretofore, to act concurrently with the other Powers, first, in opening up communication with Peking, and rescuing the American officials, missionaries, and other Americans who are in danger; second, in affording all possible protection everywhere in China to American life and property; third, in guarding and protecting all legitimate American interests; and fourth, in aiding to prevent a spread of the disorders to the other provinces of the empire and a recurrence of such disasters.

"It is, of course, too early to forecast the means of attaining this last result, but the policy of the government of the United States is to seek a solution which may bring about permanent safety and peace to China, preserve Chinese territory and administrative entity, protect all rights guaranteed to friendly Powers by treaty and international law, and safeguard for the world the principle of equal and impartial trade with all parts of the Chinese Empire."

One of the important effects of this statement recognizing the *de facto* power of the viceroys of the Chinese provinces, was to secure allegiance and prevent hostile action on the part of the viceroys of the southern provinces. On August 25, Russia, in a memorandum to the Powers, stated that she would occupy Manchuria only during the disorganized condition, and that, like the United States, she desired only peace, commerce, and an "open door" with China. On August 29, the State Department replied that the government of the United States received with much satisfaction the reiterated statement that Russia had no designs of territorial acquisition



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PRESIDENT MCKINLEY AND HIS CABINET.

President McKinley. Hon. L. J. Gage. Hon. J. W. Griggs. Hon. John D. Long. Hon. James Wilson. Hon. E. A. Hitchcock.
Hon. Elihu Root. Hon. Chas. Emory Smith. Hon. John Hay.

in China, and that the frank declarations of Russia in this regard were in accordance with those made to the United States by the other Powers. When at the close of the year it was understood that Russia had acquired a more or less permanent control of Manchuria, the congratulatory note of the United States became a subject of some comment in the European press. On September 18, Germany proposed that before the Powers entered upon peace negotiations the designated instigators of the outrages be delivered up to the Powers for punishment. Austria, Hungary, and Italy assented to this, but the other Powers, and especially the United States, objected. The state department said in this connection: "It is thought that no punitive measures can be so effective as the degradation and punishment of the responsible authors by the Supreme Imperial authority itself, and it seems only just to China that she should be afforded in the first instance an opportunity to do this, and thus rehabilitate herself before the world." On September 25, China ordered the punishment of Prince Tuan and others, and Germany then put her proposal into a form acceptable to the Powers. On September 25, the United States, in accordance with its stated policy of allowing China to manage, so far as possible, her own internal affairs, ordered General Chaffee to withdraw the American troops, leaving, however, a legation guard at Peking. On October 14, the Chinese emperor thanked the President for the initiatory efforts he had made to bring about a basis for peace negotiations. On December 22, the demands to be made upon China were unanimously agreed to by the Powers. (See article CHINESE EMPIRE, paragraph Joint Action of the Powers after Peking.)

The Open Door with China.—The increasing number of "spheres of influence" acquired by foreign Powers in China and the inclination shown by the Powers to regard these "spheres" as under their especial control as regards trade, led the United States government in September, 1899, to address notes to Great Britain, France, Germany, Russia, Italy, and Japan, stating that this government was anxious to secure from the Powers addressed guarantees that the "open door" in China would be maintained. More specifically, the United States invited the Powers to sign a declaration to the effect that the commercial privileges of this country in China, secured by treaty under the "most favored nation" clause, should not be disturbed in Chinese territory, acquired, leased, or controlled, in whole or in part, by any foreign Power. Now, as the foreign Powers themselves have "most favored nation" treaty rights in China, and as these would be placed in jeopardy if the general validity of treaty rights were not upheld, each of the Powers at once professed its willingness to sign the memorandum desired, provided that the other Powers would also sign. No single Power having been found which cared to avow that it wanted the trade which by treaty belonged to its neighbor, announcement was made on March 20, 1900, that the negotiations had been successfully completed, and, as stated by the press, that plenty of trade for all and special privileges for none had been guaranteed. In this country it was generally considered that a brilliant diplomatic triumph had been scored by the administration. It was pointed out, however, that while the signed memoranda secured freedom of trade to all nations in the meaning of freedom from abnormal and externally imposed duties and restraints, no assurance had been given or would be given securing to each nation, in accordance with the prices and quality of its merchandise, such an amount of Chinese trade as it would naturally acquire if there were no "spheres of influence" in Chinese territory or no European committees vested with "advisory" functions. The Powers guaranteed not equality of opportunity in acquiring trade, but equality for trade when acquired.

Reciprocity Treaties.—Several new reciprocity trade treaties not requiring ratification by the Senate were concluded during the year. A treaty with Portugal, operative for five years, was put into effect June 12, 1900. On July 18, 1900, a reciprocity treaty was put into effect with Italy, terminable at the end of the year 1903, if notice of one year is given by either party. On July 13, 1900, a treaty was put into effect with Germany, terminable by either party on three months' notice. Germany guarantees to the products of the United States the same tariff rates that were conceded to various European countries in treaties concluded between 1891 and 1894, and also agrees to annul the regulations providing that imported dried or evaporated fruits be inspected on account of the San José scale. This last agreement was a great relief to California and other fruit growers in the United States. Among reciprocity treaties which required the assent of the Senate, and which, therefore, lapsed, was one with Argentina on February 11.

American Offer of Mediation in the Boer War.—It became known early in March that the Orange Free State and the South African Republic had addressed to all the great Powers a request for friendly intervention. This request the Powers declined to accede to, it being thought that their relations with Great Britain were too sensitive to admit of such a friendly act. The United States, however, through the secretary of state, transmitted to the English government on March 13 the

request of the African republics, and the United States *chargé d'affaires* was directed to add that the President expressed his earnest hope that a way to bring about peace might be found, "and to say that he would be glad to aid in any friendly manner to bring about so happy a result." Lord Salisbury in reply requested the American *chargé* to convey to the United States government the sincere acknowledgments of her majesty's government for the friendly tone of their communication, but stated that her majesty's government did not propose to accept the intervention of any Power in the South African War. The English papers, in commenting upon the note of the United States, generally took the position that it was well known that England could not possibly accept outside diplomatic assistance, and that the American offer, while well meant, was *mal à propos*.

Other Foreign Relations.—On February 5, 1900, Lord Pauncefoot and Secretary of State John Hay signed a convention, subject to ratification by the Senate, modifying the Clayton-Bulwer treaty (see NICARAGUA CANAL, paragraph the Hay-Pauncefoot Treaty). The object of the convention was to facilitate the construction by the United States of a canal connecting the Atlantic and Pacific oceans. Much opposition was manifested by the Senate to this treaty, and on December 20 it was modified by the Senate in several important particulars. On January 16 the Senate ratified the treaty providing for the partition of the Samoan Islands. By this treaty Great Britain relinquished its claim in Samoa in favor of Germany and the United States, the United States taking Tutuila and other islands east of the one hundred and seventy-first degree of west longitude, and Germany taking Upolu and the other islands west of that degree. Great Britain received compensation for its concession by receiving from Germany, Savage Island, the Tonga Islands, and the islands of Choiseul and San Isabel. Extradition treaties were made with Switzerland, Peru, and Argentina, and parcel-post treaties with Guatemala and Venezuela. On May 22 a postal convention was signed with Spain, and on August 21 a general treaty of friendship and commerce with that country was concluded. On November 7 a convention was signed with Spain, subject to ratification by the Senate, providing for the purchase by the United States for the sum of \$100,000 of the islands of Caguay and Cibitu and other smaller ones lying outside of the limits described by the treaty of Paris, and which, therefore, did not technically belong to the United States, although their omission from the terms of the treaty was by oversight.

The Trust Problem.—In his annual message on December 5, 1899, President McKinley said: "It is universally conceded that combinations which engross or control the market of any particular kind of merchandise or commodity necessary to the general community . . . are obnoxious not only to the common law, but also to the public welfare. . . . Whatever power the Congress possesses over this most important matter should be promptly ascertained and asserted." In accordance with this recommendation a resolution was introduced into the House proposing a 16th Amendment to the Constitution. The acting section of this amendment provided that "Congress should have power to define, regulate, control, prohibit, or dissolve trusts, monopolies, or combinations, whether existing in the form of a corporation or otherwise." The Democrats in opposing this resolution took the position that it was introduced by the Republicans solely as an aid to party progress; they pointed out that the States would not ratify an amendment which transferred to Congress the power of controlling State commerce, nor would the Senate; nor if both did, would Congress ever dare to exercise such sweeping power. The Republicans replied that an amendment was made necessary, because the Supreme Court had decided in the Sugar Refining Company case and in others that the power possessed by Congress under the Constitution to regulate interstate commerce did not include power over commerce within a State, nor did it include any power to repress conspiracies relating to production or manufacture, since these were held to be no part of interstate commerce. For the same reason Congress was not enabled to control "agents and commission merchants who conspired in one State to sell goods produced by a conspiracy in another." These arguments, however, did not convince the Democrats—nor all of the Republicans—and the resolution failed of passage. On the following day, June 2, the House, by a vote of 273 to 1, passed an amendment to the Sherman Anti-trust law of 1890. This amendment was in effect a severe penal statute, designed to exhaust the powers possessed by Congress under the Constitution. The amendment provided that for the purposes of interstate or foreign commerce any corporation, partnership, or association may be declared illegal which was organized or conducts business in order to control the manufacture, production, or sale of any article, or which increases or diminishes the cost of any article in order that competition in the manufacture or sale of such article may thereby be prevented. Organizations declared illegal in the meaning of this act by judicial procedure instituted by any citizen or by the United States are to be perpetually prohibited from carrying on interstate or foreign commerce; the mails cannot carry their letters, nor the carriers their goods. No person called

upon shall be excused from testifying in the matter of a corporation, nor from producing books, contracts, and the like; but evidence so given shall not be used to prosecute the person giving it. Any person injured in his business by illegal acts of corporations shall be entitled to recover threefold; and the amount recovered shall in no case be less than \$250, costs and attorney's fees. Any person who is convicted of monopolizing or attempting to monopolize or conspiring with other persons to monopolize any part of interstate or foreign trade shall be deemed guilty of a crime, and shall be fined from \$500 to \$5000 and imprisoned for from six months to two years. From the operation of this act trade-unions or associations of laborers are specifically excluded.

This bill having passed the House, was referred by the Senate to the Judiciary Committee, which had not reported it when Congress adjourned. An interesting feature of the report upon the bill by the House Judiciary Committee was their judgment upon the value of publicity in the matter of trusts. They said: "We have also considered the various suggestions that have been made relative to publicity; and while it is, perhaps, probable that some advantages might result therefrom, we are of the opinion that the inconvenience and disturbance to legitimate industry and business would be very much in excess of any advantage that might reasonably be expected from such legislation." For a discussion of the formation, policy, and economic outlook of trusts, see *TRUSTS*.

Reapportionment of Representatives in Congress.—The advisability of reapportioning and reducing the representatives of the Southern States in Congress was discussed to a considerable extent during 1900. It was pointed out that the action of several of these States in practically eliminating the negro vote made a reapportionment mandatory under the 14th Amendment of the Constitution, which provides that when the right of any male citizens of a State to vote is abridged "the basis of representation therein shall be reduced in the proportion which the number of such male citizens shall bear to the whole number of male citizens 21 years of age in such State." The application of this constitutional provision in view of the Southern franchise system was not denied by Southern statesmen. It was noted, however, that the proper reduction of representation presented grave practical difficulties, for the restrictive franchise laws of the different States were unequal both in their wording and operation, and evidence as to the number of persons actually debarred from voting would be hard to obtain. Moreover, to reduce representation would arouse the sectional prejudices which had been slumbering since the abandonment of the so-called Force bill, advocated by President Harrison. That some action was possible, however, in the near future was evinced by President McKinley's message to Congress in December, 1900, in which he said: "I recommend that Congress at its present session apportion representation among the several States as provided by the Constitution."

The Philippine Insurrection.—The present paragraph deals exclusively with the operations of the army in the Philippines. For a general discussion of Conditions in the Philippines, the Philippine Commission, the Amnesty Proclamation, etc., see those subjects under the *PHILIPPINES*.

The United States troops in the Philippines in November, 1899, according to the report of the secretary of war, dated on the 29th of that month, comprised "905 officers and 30,578 men of the regular force and 594 officers and 15,388 men of the volunteer force, making an aggregate of 1499 officers and 45,966 men;" additional troops at that time *en route* to the Philippines brought up the total force in January to 2051 officers and 63,483 men. Except at the beginning of the year the military operations during 1900 consisted almost exclusively of attacking or repelling small detached Filipino forces, and of sending little expeditions to all quarters of the archipelago, and of refighting bands that had been thought pacified. In the spring of the year the military authorities thought that the insurrection was about played out; later, however, they admitted that such a guerilla, bushwhacking war as was being waged had no determinable limits, and that it would not be practicable to withdraw troops from the Philippines, as had been anticipated. In his annual message for 1900 the secretary of war emphasized the necessity for continuing the full strength of the Eastern forces, and legislation to that end was recommended to Congress. The situation toward the end of 1899 was this: Central Luzon with Manila for a base had been cleared of effective Filipino soldiery, and the bands had scattered to the north and west and more especially to the south of the island. In Bulacan, east of Manila, and in Cavite, south, there were considerable forces. With the exception of the island of Negros, the Visayan Islands, south of the island of Luzon, were also held through their chief seaport towns by the insurgents. Communication between the Visayan Islands and the mountains in the north of Luzon was held through road and trail running through Bulacan. In leading an expedition which broke up this line of communication Major-General Lawton was killed on December 18, 1899. On January 4, 1900, operations were begun under General J. C.

Bates in Cavite. Troops under General Wheaton confronted the Filipinos in the north of the province, while another force under General Schwan moved rapidly south, keeping east of the province, and then quickly turning west captured the Filipino bases in the south of Cavite and cut off the retreat to the mountains. "By the 8th of February the organized forces of the insurgents in the region mentioned had ceased to exist." In the meantime a force under Brigadier-General William A. Kobbé had taken possession of and opened to trade the principal hemp ports in the island of Albay, the extreme southeastern province of Luzon, and in the islands of Leyte, Samar, and Catanduanes. An expedition under Brigadier-General James M. Bell left Manila on February 15 and took possession of western Albay and of the north and south Camarines provinces, which were glutted with Filipino bands retreating from the north. In March General Bates established garrisons in the island of Mindanao. Coincidentally other expeditions marched through various islands of the Visayan group, scattering the insurgents. The secretary of war reported that with the execution of these movements and others incidental to them "all formal and open resistance to American authority in the Philippines terminated, leaving only an exceedingly vexatious and annoying guerilla warfare of a character closely approaching brigandage, which will require time, patience, and good judgment to finally suppress." An instance of this annoying warfare was conveyed in a despatch from General Otis on March 18, saying that Manila itself was "the most troublesome centre in the situation." Though United States forces were in full control, Filipino plotting and scheming there went on unabated. From the provinces of Zambales and Nueva Ecija, north of Manila, came reports that the natives were being terrorized by their compatriots in arms; nearly everywhere in Luzon it was unsafe for Americans to move about without a guard, the American tenure was restricted to the garrisoned towns. On April 7 the "Division of the Philippines" was created by the secretary of war, with General Otis in command, and divided into four departments, commanded as follows: All Luzon north of the provinces of Manila, Morong, and La Infanta—that is, in general north of the city of Manila—to be commanded by Major-General MacArthur; the remainder of Luzon to be commanded by Major-General John C. Bates; the islands south of southern Luzon and east of the line of longitude 121° 45' and northward through the San Bernardino Straits to be commanded by Brigadier-General Robert P. Hughes; the remainder of the archipelago, including the island of Mindanao, to be commanded by Brigadier-General William A. Kobbé. During April severe skirmishes took place in the north and west of Luzon and in the island of Mindanao. General Otis reported that from January 1 to April 1 the Filipinos had lost: Killed, 1426; captured, 1453, and that large quantities of their arms had been captured. On May 5, upon the resignation of General Otis, Major-General Arthur MacArthur was appointed commander-in-chief of the Division of the Philippines. On May 6 General Pantaleon Garcia, second in command under Aguinaldo, was captured at Jaen, near San Isidro. On May 21 the conditions in southern Luzon were so threatening and the attitude of the insurgents so uncompromising to those of the natives who were friendly to the Americans that orders were given not to attempt at that time to organize municipal governments. On June 6 an expedition that had been pursuing Aguinaldo in the north of Luzon returned with the intelligence that by papers belonging to Aguinaldo which they had obtained it was evident that many natives supposedly friendly to the Americans, and especially many local municipal presidents, reported regularly to Aguinaldo upon the disposition and strength of the American troops. In the early part of June three important captures were made—namely, General Pio del Pilar, probably the most aggressive of the Filipino leaders, and Generals Hizon and Cavestany. At the end of June it was reported that the American losses for all causes during the year past were 1442. On June 21 General MacArthur published an amnesty proclamation (see PHILIPPINES, paragraph Amnesty Proclamation), and on the same day some 200 of the most prominent Filipinos in the islands, including Generals Garcia, Pilar, and Macabulas, met to formulate terms of peace. These included amnesty, the return of confiscated Filipino property, employment for the revolutionary generals, financial aid for destitute Filipino soldiers, the rights given under the American Constitution, the establishment of civil government, and the expulsion of the friars. With slight modifications all these requests except the last were acceded to by General MacArthur, and several of the leading generals took the oath of allegiance. But the guerilla warfare showed small signs of abating. In July heavy fighting was reported at Panay, and the American losses there for the month were heavier than at any time during the war. In August conditions seemed to improve, and the natives in the north of Luzon engaged in planting to a greater extent than they had done since the war broke out. On August 21 the Philippine Commission (see PHILIPPINES, paragraph Conditions in the Philippines) reported that the north of Luzon was practically rid of insurgents; that only the Tagalogs and such allies as they could constrain were keeping up the warfare, and

that if the election in the United States endorsed the American policy in the Philippines the remnant of the insurrection would disappear within sixty days. In the middle of September there was renewed and heavy fighting in central and northern Luzon. A battle near Laguna de Bay between nearly 1000 insurgents and 130 troops resulted in the repulse of the Americans, with 24 killed. General Young in northern Luzon was compelled to ask for reinforcements. Toward the last of October heavy fighting took place near Narvican in northwest Luzon, but General Young had by that time been reinforced, so that the insurgent forces did not gain headway. The election in the United States seemed to make very little difference in the activity of the insurgents. The island of Samar, which was almost completely in the control of the insurgents, and which the peaceable natives were leaving was gained for the Americans by an expedition under General Hare. Early in December it was reported that many insurgents were taking the oath of allegiance. On December 2 over 2000 natives in Ilocos Sur took the oath, and later it was stated that in the island of Panay nearly 1000 a day were swearing allegiance. At the end of the year there were about 70,000 soldiers and sailors in the Philippines. The secretary of war stated in his annual report that in order to give civil government and protection to the friendly natives, as well as to pacify the islands, over 400 different posts were held by the army. "The maintenance of these posts," the secretary states, "involves the continued employment of a large force, but as the Tagalogs who are in rebellion have deliberately adopted the policy of murdering, so far as they are able, all of their countrymen who are friendly to the United States, the maintenance of garrisons is at present necessary to the protection of the peaceful and unarmed Filipinos."

Federal Judiciary.—The justices of the Supreme Court of the United States and the dates of their appointments are as follows: Melville Weston Fuller, of Illinois, chief justice, appointed 1888; John Marshall Harlan, of Kentucky, appointed 1877; Horace Gray, of Massachusetts, appointed 1881; David Josiah Brewer, of Kansas, appointed 1889; Henry Billings Brown, of Michigan, appointed 1890; George Shiras, Jr., of Pennsylvania, appointed 1892; Edward Douglass White, of Louisiana, appointed 1894; Rufus W. Peckham, of New York, appointed 1895; Joseph McKenna, of California, appointed 1897. Various decisions of this court will be found under the separate States, or under the articles to whose subject matter the decisions refer. See RAILROADS; BANKS—BANKING, etc.

Constitutional Status of Porto Rico and the Philippines.—On June 14, 1900, Judge William K. Townsend, in the United States District Court for the southern district of New York, handed down a decision upholding the collector of the port of New York in his levy of duties upon tobacco imported from Porto Rico into New York by John H. Goetze, on June 6, 1899. The main question at issue was whether, under the Paris treaty, and in the absence of legislation by Congress, Porto Rico was a part of the United States in the meaning of the Constitution, which requires that "all duties, imposts, and excises shall be uniform throughout the United States." The court held that Porto Rico, before its cession and when under conquest, was a part of the United States as to foreign nations; that is, "the *de facto* title to the soil was in the United States, but its inhabitants were foreigners to the Constitution." By the treaty of Paris the United States obtained title *de jure* to the island, but in the absence of treaty stipulations or legislation by Congress the political status of its inhabitants remained unchanged. The United States is not an unfettered sovereign nation unless it can deal with territory acquired by war as it pleases. For if international considerations debar the releasing of such territory, and it is evidently folly to make it part of the nation, the welfare of the republic is imperilled unless liberty is given to act as would any other sovereign nation. The framers of the Constitution could never have intended to give the United States such a limited sovereignty in foreign affairs. On appeal from this decision the case was then taken to the Supreme Court (United States), and was placed on the calendar to be argued on December 16, 1900. On the same day a similar case involving the question of the constitutional status of the Philippines came before that court. It appeared in this case that Emil J. Pepke, a citizen of the United States and of North Dakota, while in the military service of the United States in the island of Luzon, bought there, subsequent to the ratification of the treaty of Paris, fourteen diamond rings. His regiment was ordered to San Francisco on the 31st of July, 1899, and he returned to the United States on a United States transport, and was discharged from service on September 25, 1899. From California Pepke proceeded to Chicago, Ill., where his fourteen rings were seized by a customs officer on the ground that they had been unlawfully brought into the United States, since no duty had been paid upon them. The court in which action was brought to determine the matter held insufficient a plea filed by Pepke relating the material facts and alleging that the property was not subject to customs duties under the Constitution of the United States, and as Pepke introduced no amended answer the court decreed the rings forfeit and

ordered their sale for the benefit of the United States. From this decision Pepke, through Charles H. Aldrich, solicitor-general in the Harrison administration, brought appeal to the Supreme Court. Attorney-General Griggs, in presenting the case of the government, averred that Porto Rico and the Philippines were not a part of the United States in the meaning of the constitutional clause which prescribed that "all duties, imposts, and excises shall be uniform throughout the United States." The words "United States," the attorney-general stated, were used in three different senses: 1. To designate, by a corporate name, the nation or governmental entity. 2. To refer to and mean the States composing the Union. 3. To connote, in an international sense, the extent of the domain of the United States as a sovereign nation. For example, in the 13th amendment to the Constitution, which provides that slavery "shall not exist within the United States or any place subject to their jurisdiction," the words "United States" are used in the second meaning stated, and then by an *additive* clause the provisions of the section are extended to apply to the United States internationally—that is, the States and also whatever Territories or dependencies may be subject to them. But the constitutional requirement for uniform customs duties applies only to the geographical area comprised by the States. It is not based upon citizenship, but upon the place of origin of merchandise. And therefore if merchandise brought from without the States is taxed equally at all ports of the United States the requirement of the Constitution is complied with. But counsel for the plaintiffs allege that this requirement is not complied with when merchandise from Porto Rico and the Philippines is taxed because the Constitution gives no authority for assuming sovereignty over any lands except as they are incorporated and made part of the "United States" and the boundaries of the United States, within the meaning of the tax clause, correspondingly enlarged. This interpretation of the Constitution, however, the attorney-general held to be inadmissible. For the United States is *de facto* a sovereign nation, entitled under international law to "deal with the inhabitants of conquered or ceded territory as it sees fit." But the denial of this power would seriously curtail, relatively to other nations, United States sovereignty. If such a curtailment were contemplated by the Constitution, it is incredible that the framers, who were well versed in the law of nations, should not have made statement to that effect, and therefore the fact that the Constitution contains nothing to indicate that the United States can not equally compete with other nations is *prima facie* evidence that it can so compete. This view also was held by those early statesmen who knew at first hand the intent of the Constitution. Thus, the doubts of Jefferson concerning the Louisiana purchase were not as to whether the United States could acquire foreign territory, but whether such territory, held as a possession, could be annexed to and made part of the United States. That Congress has likewise believed the United States to be a fully sovereign nation is shown by two facts: 1. "The treaty-making power of the government has exercised the right to deal with the status of the inhabitants of ceded territory in every treaty of cession from 1805 to 1898," and the status fixed has varied exceedingly. 2. Congress has in all instances of organized territory specifically extended to them the federal laws. To Vermont, for example, at one time a Territory, the revenue laws were by legislative act made applicable. But this would have been an act of supererogation if the Constitution extended to Vermont *ex proprio vigore*. The court asked the attorney-general whether, in his opinion, if Congress could extend the Constitution and the laws to the Territories it could also take them away. The attorney-general answered that the laws once extended created an inviolable contract which could not be broken. Turning to the interpretation of the Constitution by the courts the attorney-general stated that with one partial exception judicial decision had since the beginning of the government upheld the right of Congress to govern the Territories. The Supreme Court said in the Mormon Church case: "It would be absurd to hold that the United States has power to acquire territory and no power to govern it when acquired. The United States Government is the only one which can impose laws upon the Territories, and its sovereignty over them is complete." The court asked to what extent then Congress could impose a tariff on the unorganized territories of New Mexico, Oklahoma, and Alaska, and the court pointed out that when Chief Justice Marshall said: "The power to collect and lay duties, imposts and excises may be exercised and must be exercised throughout the United States," reference was had not only to the States but also to the District of Columbia and the territory west of the Missouri. The attorney-general said that of all judicial decisions only the Dred Scott decision had upheld the doctrine of the *ex proprio vigore* extension of the Constitution. This doctrine, the attorney-general said, was invented by Calhoun as a means of irrevocably fastening slavery upon California and New Mexico; it was in conflict with the previous views of statesmen of all parties, and the affirming decision of Chief Justice Taney had been tacitly ignored and repudiated in later Supreme Court decisions and in congressional action. Counsel for the plaintiffs, in combating the views of the attorney-general, stated (1) that

Porto Rico and the Philippines, when the merchandise in point was brought from them, were not "foreign countries" within the meaning of the congressional tariff act, and (2) that if Porto Rico and the Philippines were to be deemed "foreign countries" under that act, then that act violated as to those countries the constitutional provision that "all duties, imposts and excises must be uniform throughout the United States." This last statement brought the case to depend, as in the attorney-general's argument, upon the question as to whether Porto Rico and the Philippines were a part of the United States within the meaning of the constitutional clause regarding imposts. The Constitution, counsel held, established one national government restricted always and everywhere to the exercise of those powers especially delegated to it by the Constitution, or which are not prohibited and are consistent with the spirit and intent of the Constitution. Now, if it be admitted that the Constitution does not forbid the taxing of imports from unorganized territories, still such taxes are unconstitutional, because they violate the intent of the Constitution to establish one immutable form of government applying equally to all lands under the domain of the United States. The cases cited by the attorney-general wherein it is claimed that the absolute dominion of Congress over the Territories is sustained refer to claims for political, not for civil, rights. Those decisions do, however, view the provisions of the Constitution "not as bound by any limits in their application to person, place, or time, but as intended always, everywhere, and for all." As then the affirmations of the Constitution are absolute, so are the prohibitions, which are their inseparable concomitants. From this it follows that immediately that Porto Rico and the Philippines were acquired those prohibitions applied to them. In this connection counsel claimed that the statement of Chief Justice Marshall that, as concerned imposts, the words "throughout the United States," meant also Territories, was conclusive as to the inclusion of Porto Rico and the Philippines and the contention of the plaintiffs. The Dred Scott decision was also cited.

UNITED STATES FISH COMMISSION. See FISH AND FISHERIES.

UNITED STATES MILITARY ACADEMY. See MILITARY ACADEMY, UNITED STATES.

UNIVERSALISTS, a body of Christians who believe in the final salvation of man, and hold that evil is temporary and good eternal, originated from the theology of the Rev. John Murray, an English preacher who came to America in 1770. Their doctrines are expressed in the Winchester Profession of Belief, adopted 1803; their church constitution is a modified Presbyterianism, in which a general convention, elected by the various State conventions, and meeting annually in October, is supreme. On January 22, 1900, a committee appointed by the last convention held a conference with representatives of the American Unitarian Association, and made recommendations directed toward closer co-operation between the two churches. Returns for the past year show that the Universalists have 735 ministers, 764 churches, and 52,926 members, exclusive of 144 in Japan, where the mission church gives indications of future ability to assume its own entire administration. A total of \$1,602,987 was paid to the various enterprises of the church, of which \$214,672 was expended on church edifices, \$239,972 on educational institutions, and \$78,673 on missions.

UNIVERSITIES, AMERICAN, ASSOCIATION OF, was organized at a conference held in Chicago during February, 1900, for the purpose of considering matters of common interest relating to graduate study. Its initial membership consists of California, Catholic, Chicago, Clark, Columbia, Cornell, Harvard, Johns Hopkins, Michigan, Pennsylvania, Princeton, Stanford, Wisconsin, and Yale universities. Other institutions may be admitted at the annual conference on the invitation of the committee endorsed by a three-fourths vote of the members of the association. The first annual meeting of the new association will be held in Chicago in February, 1901. The meetings are to be private and the discussions as informal as possible. Officers 1900-01: President, Harvard University; vice-president, California University; secretary, Chicago University; additional members of executive committee, Columbia University, Johns Hopkins University.

UNIVERSITIES AND COLLEGES. The year 1900 was characterized by unusual prosperity and activity in the universities and colleges. Many important questions relating to these institutions have been discussed, of which the most important are the present condition and future development of secondary education, especially in its bearings on college entrance requirements; the constitution and fate of the independent American college; the elective system, and other matters affecting the college curriculum; the relation of the college to the professional school; the length of the college course; schools of graduate instruction; simplification of degrees; and the relation of endowment to academic freedom of speech. These and other topics of the year will be found treated below in the following paragraphs.

The Elective System.—The policy of allowing the freshman in Arts considerable freedom in shaping his college course is being widely adopted, not only in those institutions, especially in the West, which are little hampered by tradition, but in some of the oldest and most conservative colleges. At Harvard, which was one of the first prominent colleges in the country to adopt the elective system, tables have been prepared covering the period of the past fifteen years. These, while they do not furnish material for an exhaustive study of the system, support the belief that as a body the students use the system with reasonable intelligence, with no extreme specialization, and a fair amount of judicious choice of correlated subjects. The conclusion of the Harvard authorities is, that a boy with proper training may use the system wisely; with improper training, he will accomplish more than under any other system; with his future career determined, he needs free election; without any knowledge of his future profession, he should choose in those fields where he takes most pleasure and where he may be able to excel. The only study absolutely required in Harvard's College course is English, and even this may be passed up under certain conditions. At Cornell, since 1897, all subjects within the A.B. course are elective. Here, as at Harvard, no decided trend of selection which promises to make any one group of studies prominent has been observed. The dean reports that the average degree of preparation in entrance Greek has been steadily rising. The number of students who elect Greek in their freshman year is greater than the number who formerly studied required Greek, but the number of such is smaller in the sophomore year. At Yale the work of the senior year has been made entirely elective for the first time, and for the sophomores a large portion of the course has been made elective, as the basis for the future work of the college. The chief point of interest lies in the president's report that this change was necessary "in order that the graduate of Yale College might stand on the same level in beginning his professional studies which is attained by the graduates of other first-rate colleges at the present day." This change in one of the most conservative American colleges is among the most interesting events of the year. President Hadley reports that the fear that sophomore election would mean an unintelligent, and perhaps frivolous, choice of studies, has proved unfounded. At Brown it is the general opinion of the faculty that the elective system needs to be surrounded with certain safeguards. The president does not believe that the majority of students elect courses because they are supposed to be easy, but he does find that they select them often under a misconception, or merely with regard to recitation hours. He finds a constant tendency to specialize—which is an opposite report, it will be noted, to that given out by Harvard—and to give to technical training the years which should be dedicated to breadth of culture and enrichment of spirit. He points out that the dangers of the system should be minimized by personal counsel and by a grouping of studies with such regard to their natural sequences as shall prevent the years of college life from becoming mere *Wanderjahre*.

At the University of Indiana, which occupies the middle course between a rigid curriculum and restricted selection of studies, the president testifies that such subjects as English, language, history and economics have attracted a far larger student body than do either the physical or biological sciences, and that the elective policy has improved the whole student body and stimulated teaching. At the University of Nebraska the group system was abolished in 1900 in the academic courses and free election given in all but the freshman year. The result has been great liberalizing in the choice of subjects, and yet there has not been much search for easy combinations. The language departments have not been neglected, as it was feared might be the case. Professor Ladd, of Yale, in an article written in 1900 on *Current College Problems*, argues that the chief portion of the present college curriculum cannot wisely be made optional, for it belongs on the other than the university side of the college, being an indispensable part of that training which enables the student to exercise such choice of subjects and teachers as belongs to university education. The university itself must decide how much and what kind of such education the student must have in order to enter into its freedom. He believes especially that the freshman is not yet ready for such election.

The College Curriculum.—Many institutions now recognize that a student may, without sacrificing anything of value educationally in his college course, take a part or all of the senior work in professional departments, and credit is often given for such work toward the degree both of the college and the professional school. The question is best illustrated by the action taken by the University of Pennsylvania faculty in 1899-1900, whereby, by a readjustment of courses, the upper-class work of the college has been so modified as to be preliminary to the professional course (in this case the School of Medicine) which is to follow. In other words, the college now recognizes educational value in the first year's studies in the Medical School, and the Medical School recognizes professional value in certain studies of the upper years of the college, making it possible for a student to obtain both degrees in seven years.

Such legislation, which is becoming more common every year, not only makes it

more easy for the professional school to become a graduate school, but is another step in the tendency to allow a student to take his bachelor's degree in three years. Whatever may be the opinion as to the advisability of thus shortening the college course, it is undeniably a fact that the tendency is in that direction. At the close of 1900 steps were being taken at Yale to rearrange the curriculum, so that it might be possible for the student to obtain the A.B. degree in three years. The correlation of work in the college and the professional schools has already practically shortened the college course to three years in some universities. At the independent colleges, however, the absence of professional schools adds difficulties to the problem of reducing the length of the course. "Those most deeply interested in education," says President Carter, of Williams, "will not agree in this solution, and we may see some institutions offering a three years' course and some insisting on the longer period within the next decade. It is, however, to be feared that if in the oldest universities the three years' course is established, the practical American mind will let the longer period of liberal training everywhere disappear. The change, if it come, may prove a serious loss to some of the smaller colleges which have had a most honorable history and have conspicuously shown in their graduates the value of four years of liberal training." According to President Thwing, of Western Reserve University, the earlier entrance of men into their professional life is better secured by a final adjustment of the first years taken than by a shortening of the college course itself. He believes that a shortening of the college course to three years would not be advisable at Western Reserve. One of the greatest objections to the shorter course, but one often overlooked, President Thwing states as follows: "The longer the college course, the richer the results for the student. It is to be remembered that the completion of the work of the course represents only a share of the worth of the training received. This worth is found far more in the teacher than in the teaching. Also it is found in no small degree in the association of the students with each other." Harvard, as is well known, favors the shorter course. In the class of 1900 about fifty students had completed, or nearly completed, the work required for the A.B. degree, and were for the most part registered on leave of absence from the college, in professional schools, and there were many more on leave of absence who actually took the degree in three years. Professor C. L. Smith, of Harvard, writing in the *Atlantic Monthly*, thinks that the abridgment of the undergraduate course will be one of the next general advances in education. "There is no danger now," he says, "as would have been the case thirty years ago, of turning the student away at the end of that time. The growth of graduate schools has familiarized every student with the fact that the bachelor's degree is no longer the crown of a liberal education, but only the first degree in arts. This is true, not only of the universities, but of the independent colleges, for the best of which it would not be difficult to provide two or three additional years, and there is ground for confidence that the number of those who would take such an extended course would be considerable." The college, he adds, must be a place of freedom with responsibility, and the old question of classics *versus* modern learning will be decided by the student himself in accordance with his own mental needs and tastes. At Princeton, new academic entrance conditions, which are to go into effect in 1902, have been so framed that a candidate may, at his option, enter the college upon advanced standing, by passing a part or the whole of his freshman year. In the latter case he may practically gain his bachelor's degree in three years.

English in the Curriculum.—The report of the president of Yale for 1900 states that among all college studies English is the one which most steadily grows in public favor. It is also recorded that in 1900 English was for the first time introduced as a co-ordinate part of the freshman year at Yale on the same level as either Latin or Greek. It is being elected by upper-class students in constantly increasing numbers, and its serious study outside the curriculum is increasing year by year. At Harvard, where the faculty has gradually abolished all required English in the three upper college classes, undergraduates are resorting in large numbers to the elective courses in English. One of the commonest remarks heard to-day is that the college graduate is uneducated in his native tongue and is unable to write clear, forcible English, and that this is largely due to the insufficient preparation in the elements of writing which the college freshman receives in his preparatory courses. It is, therefore, somewhat startling to learn that Harvard is encouraging candidates for admission to carry their preparation to such a point as to anticipate freshman English, and has declared, through the dean of the college, the belief that a large portion of the formal training in the writing of English desirable for every college graduate can now be obtained early in the secondary school, so that the time required in the college can safely be reduced.

Entrance Requirements and the Secondary Schools.—It is officially reported that the special reason for the recent great increase of students at the University of California is the development of public high schools in the State in their relation through well-formulated courses to the activities of the university. This condition

is demonstrative of the tendency in the West, where the university stands at the head of the State educational system, and has done much to raise the standard of the lower schools. In the South the University of Missouri and the University of Texas are examples of institutions which have done much to raise the standard of secondary education, during the past two or three years especially, and each has now about 100 affiliated schools whose graduates are admitted to the university courses on certificate. In 1902 new entrance requirements of modern languages and natural sciences will go into effect at the University of Texas, and thereafter these subjects will be added to English history, mathematics, Latin, and Greek, in which subjects the Texas schools are now affiliated. In Wisconsin in 1900, 121 out of 153 four-year high schools were on the accredited list of the university. In many of the States standard courses are prepared for the lower schools by the State universities, which give aid also through their summer schools, special courses, teachers' colleges, and visits of inspection. In the University of Nebraska in 1900 new entrance requirements were adopted, based on what is being done in the best high schools of the State, instead of what is required for entrance into other colleges. This, according to the report of the president, closes the gap between the high schools and university, but it might be added that it is a question whether it contributes to raise the standard of either. One bad tendency which has been pointed out in the relations of the Western State universities to the secondary schools is the strong desire of the high schools to affiliate with the universities, leading many to carry heavier courses of study than they are able. As a partial offset to this, some of the universities are carrying subfreshman, or preparatory, courses. This, at the best, is a makeshift. It is notable that several preparatory departments were discontinued by universities in 1900. In Missouri it is a serious proposition that the high schools gradually become industrial as well as literary and scientific, including courses not only in "mechanics, horticulture, and entomology, but domestic science."

Among changes in entrance requirements during 1900 may be mentioned, as examples, those of Michigan and Columbia. In the literary department of Michigan changes have been made in the direction of greater flexibility, the only studies now insisted upon being English, mathematics, and physics, the remaining requirements—a little over one-half—being optional among certain selected groups. At Columbia a slight modification for admission now makes it possible to enter the college without Latin, which may be taken after matriculation. This change, though seemingly unimportant, is far-reaching in its consequences, relating the college to the high school in a natural and effective way and making it possible for the college, without abandoning other regular classical education, to accept graduates from any public high school, instead of graduates from so-called classical high schools only. Columbia has also, in line with recommendations of the National Educational Association, made such changes as shall express her entrance requirements in points rather than subjects—a change in the direction of greater flexibility. California took a somewhat similar action in 1900 to the extent of emphasizing the fact that training is more important than subject-matter. Both these changes mean a nearer approach under present conditions toward unification of entrance requirements among colleges. Amherst also in 1899-1900 made such changes that a freshman may enter the college with only one ancient language. In reference to the question of the certificate system, as opposed to entrance on examination, important testimony is given in the 1900 reports from Brown University and Smith College. The trustees of the latter institution after twenty years' experience have decided that it is far better to permit the practice of admitting on certificate, it being the opinion of the president that the system, properly administered, obtains better work from the student. It is his opinion that the uncertainty of examinations is not conducive to the best work, and the attendant drilling to meet the peculiar requirements of certain colleges overshadows the importance of the real development of the students. President Faunce of Brown reports that all the colleges of New England, with two important exceptions, now admit students of some schools by certificate, instead of examination. But the certificate method may be said to have evils of its own. The systematic visitation of the secondary schools by the college authorities, as in the case of the universities of Michigan and California, President Faunce considers most desirable. Hereafter at Brown each school will be granted the privilege of certification for a definite period, varying with the age and standing of the school, at the expiration of which time the school must again submit a statement, and the approval may then be renewed. No student is fully matriculated until the close of the first term of his freshman year, when he has demonstrated his ability to profit by the college course. Brown reports that certification in English has been almost always unsatisfactory, and favors some combination of certification and examination.

Important and definite action regarding uniform college entrance requirements was taken in 1900 by the Association of Colleges and Preparatory Schools of the Middle States and Maryland. An examination board was appointed, including

a representative of each college in the Middle States and Maryland which has a freshman class of not less than fifty members, except Princeton University. The five representatives of secondary schools upon the board are appointed by the association to serve for a term of one year. The certificates to be issued by the board to those students who take the uniform examinations will be accepted for such subjects as they cover by the co-operating colleges and by Princeton University. It is assumed that they will also be accepted by all colleges, wherever situated, which admit by certificate. It is hoped that all other colleges will accept them as a satisfactory alternative for their own separate admission examinations. No college which accepts these certificates in lieu of separate admission examinations is asked to surrender its right to enforce such standards of excellence as it pleases or to make such allowance as it wishes for character and capacity on the part of students applying for admission. The certificate will simply state that the holder was examined at a stated time and place in specified subjects, and that as a result of such examinations he received the rating entered upon the certificate. Each college will determine for itself what maximum ratings it will accept as satisfactory. It is hoped that the uniform examinations held by the board will in time supersede all separate admission examinations now held by the several colleges. The examinations will be held on June 17-21, 1901, at various cities and institutions.

Degrees.—The question concerning the future requirements for the degree of Bachelor of Arts is a pressing one in collegiate education, and has agitated to some extent every American college. The president of Brown, in his report for 1900, discusses the question as to whether in the future, as in the past, both Greek and Latin shall be required for the degree of A.B. or whether, in recognition of the larger part which the so-called modern studies have come to play in education, the degree of A.B. shall be given for one ancient language, provided that a full equivalent for the other language is presented by the student. It is interesting to note that there is nearly an even division of opinion on this question. Of a list recently made of 23 important universities in this country, 12 institutions require Greek for the degree of A.B.—namely, Yale, Princeton, Pennsylvania, Western Reserve, Chicago, Michigan, Minnesota, Wisconsin, Missouri, Colorado, California, and Vanderbilt; and 11 institutions grant the degree without Greek—namely, Harvard, Columbia, Cornell, Johns Hopkins, Virginia, Indiana, Illinois, Kansas, Nebraska, Stanford, and Northwestern. The A.B. degree can be obtained in some institutions, as at Harvard and Cornell, where the entire course is practically elective, without any ancient language whatever. The question of not requiring Greek was debated by the Brown faculty during 1900 in a series of meetings, extending over several months, but no conclusion has as yet been reached. President Faunce sums up the question as follows: "Those who advocate the retention of our present requirements do so on the ground that there is really no substitute for the culture furnished by the Greek language and literature; that the degree of A.B. has a historic meaning, which may not lightly be surrendered; that for other courses of study other degrees should be given, and that at the present time we should strenuously resist any tendency to displace 'culture studies' by 'bread-and-butter studies,' which more properly belong in technical or professional schools. On the other hand, those who advocate a change do so on the ground that the degree of A.B. has already lost its historic meaning, being annually granted to hundreds of graduates who present only one ancient language; that it properly denotes the attainment of a liberal education by whatever means attained; that in view of the great development of modern science and modern industry a larger place should be allowed to the sciences than the modern languages in education, and that Greek, if it be so interesting and valuable as is claimed, no longer needs a system of 'protection,' but may be trusted to stand upon its own merits and attract students by its inherent worth."

A consideration of this question has drawn into discussion the allied subject of the simplification of degrees. For many years the first degree conferred by the American college was the degree of Bachelor of Arts, A.B. The American college now confers as the first degree not only A.B., but also Bachelor of Letters, B.L.; Bachelor of Philosophy, Ph.B., and Bachelor of Science, B.S., added degrees caused by the change in the content of the curriculum, which itself was caused by the enlargement of the field of scientific knowledge and modern languages and literature. At the present time there is great diversity in respect to the significance of the first degree. President Thwing of Western Reserve University gives a list of colleges, grouped according to the number of baccalaureate degrees conferred. Those which conferred only one in 1900 were: Harvard, Johns Hopkins, Columbia, Cornell, Williams, Virginia, Nebraska, Kansas, Vassar, Radcliffe, Bryn Mawr, and Wellesley. Two bachelors' degrees were given at Pennsylvania, Vermont, Texas, and Amherst; three at Chicago, California, Missouri, Iowa, Cincinnati, Rochester, Boston, New York, Wesleyan, Hobart, and Tufts; and four at Northwestern, Michigan, and Wisconsin. The president recommends that by reason of the changes that have

been made in respect to the significance of the degree of A.B., on and after the commencement of 1901 the degree of A.B. be conferred on all students of Western Reserve who have completed the regular college courses. Similar action is being taken by many universities in reference to the higher degrees. At the University of Michigan it has been decided to abolish the degrees of Master of Philosophy and Master of Letters and to confer henceforth only that of Master of Arts on all bachelors who may earn the master's degree, although Master of Science may be taken at option by scientific students. President Angell reports that there is an unnecessary variety of masters' degrees to designate work which often does not differ in character or value. What President Thwing has to say upon bachelors' degrees refers likewise to the masters': "The history of the bachelor's degree since the revival of learning is either vague or obscure or complex, being characterized by a medley which at present also characterizes its various relationships. The general significance of the degree, however, is clear. The one upon whom it is conferred is supposed to be a gentleman of trained intellectual power and one possessed of liberal learning. This interpretation is, of course, not infrequently unjust. Formerly, as the content of the college curriculum was simple, the one who received the degree was supposed to be a scholar in the ancient classics and in simple mathematics and metaphysics. With the vast enlargement of the field of knowledge and with the introduction of the elective system of studies as a consequence, it is no longer possible to make an inference respecting the content of the knowledge possessed by him who receives the degree. Knowledge of the greatest variety is possessed by men who graduate from the same college and who receive the same degree. But the degree of Bachelor of Arts should certainly stand for the possession of trained power as a thinker. This is as exact an interpretation of the significance of the degree as can now be had."

One of the most radical innovations in the matter of conferring degrees is that adopted by the University of Chicago, which conferred in 1900 for the first time the title, or degree, of Associate in Arts, Philosophy, and Science upon those students who had completed the work of the junior colleges—that is, the work of the freshman and sophomore years in the undergraduate departments of the university. Briefly, it is believed that the results of this degree will be as follows: (1) Many students will find it convenient to give up college work at the end of the sophomore year; (2) many students who would not otherwise do so may undertake at least two years of college work; (3) the professional schools will be able to raise their standard for admission, and in any case many who desire a professional education will take the first two years of the college work; (4) many academies and high schools will be encouraged to develop higher work; (5) many colleges which have not the means to do the work of the senior and junior years will be satisfied under this arrangement to do the lower work. A full discussion of the question is given in the quarterly report of President Harper, presented April 2, 1900.

Recent Professional Schools, etc.—The foundation of numerous professional, technical and scientific schools of a high order, especially in connection with universities, has been one of the most noteworthy tendencies of the century. The latest form of professional school in America is that of forestry, the first of such schools being established at Cornell in 1898 and the second at Yale in 1900, while efforts are being made to found similar departments at the Universities of Michigan, Wisconsin, and California. (See FORESTRY, paragraph American Forestry Schools.) Another recent tendency is the establishment of courses and schools of business and finance. In reference to a school of commerce recently organized at the University of Wisconsin, the president reports that the university apparently is appealing to a considerable class of the community whose needs for higher education were not met by any of the courses previously established. Certain courses in the department of finance at the University of Pennsylvania were replaced in 1899-1900 by a new four-years' course in commerce and industry, in which business and business life will be taught, not as an occupation alone, but as involving "duties that reach beyond self, with principles that control them, and with auxiliary sciences or disciplines that cannot be ignored." At the University of Michigan during the year special courses were arranged in Higher Commercial Education and Public Administration; at the University of Chicago a more complete organization of the College of Commerce and Administration was brought about; at Columbia provision was made for the eventual establishment of a school of commerce, and at Dartmouth the Amos Tuck School of Administration and Finance was founded, with an endowment of \$300,000. A third tendency of recent years is the general establishment of summer sessions, work in which is allowed to count toward the degree. Interesting reports regarding the formation or extension of summer courses were made for the year 1899-1900 by the presidents of Dartmouth, Texas, Wisconsin, California, Columbia, and other institutions. At Columbia the question has been raised as to the advisability of adopting the quarter system in use at the University of Chicago (q.v.).

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Catholicism and the Higher Education.—The action of President Eliot in refusing to admit graduates of Boston College to the Harvard Law School without their passing certain examinations evoked considerable discussion as to the relative merits of the curriculum for the baccalaureate in Catholic and non-Catholic colleges. The Harvard Law School is a graduate institution, and President Eliot stated that Boston College was not on the list of those colleges whose courses are of sufficient merit to allow the admittance of the graduates of those colleges without examination. In an article in the *Atlantic Monthly* President Eliot criticised the curriculum of Jesuit colleges in general, coupling them with the Moslem schools in his description of their methods. A number of replies were made by Catholic educators, notably in a pamphlet written by Father Brosnahan, a well-known Jesuit, and the subject was made a prominent topic of discussion at the annual meeting of the Conference of Catholic Colleges (q.v.).

Academic Freedom of Speech.—The question regarding the relation of large endowments to academic freedom of speech is one that has attracted attention at more or less frequent intervals for some years through such cases as that of Professors Bemis and Hourwich at the University of Chicago, President Andrews at Brown, and others. According to a recent writer on this subject there are three moral problems which administrators of college endowments have to meet. The first of these is to determine whether such wealth can honestly be accepted at all; the second is what the attitude of college administrators should be in the business world in matters involving business morality, and third, the question of deciding whether the teachings of the institution concerned shall be permitted to influence detrimentally the possible earnings of invested funds or to endanger possible future endowments. The first of these questions was brought forward in a minor way by an offer by Mr. John D. Rockefeller of \$100,000 toward the extinguishment of the debt of Wellesley College, which led to a memorial by Miss Vida B. Scudder, professor of English literature of Wellesley, and seventeen other members of the faculty, requesting that inquiry be made into the business methods of the Standard Oil Company to insure the propriety of accepting the gift. It is a matter of record that the gift was accepted and that Mr. Rockefeller was warmly thanked by the president in her annual report for 1899-1900, and it is not known that the memorial was at any time seriously considered. Upon the acceptance of the gift, however, Miss Scudder gave notice that her resignation might be considered at any time in case freedom of expression might be hampered in consequence of the gift; she also wrote a long magazine article upon the subject. There was held about this time also a conference on "tainted wealth," which was presided over by Bishop Potter and attended by representatives of nearly all the New England colleges. These facts probably have no particular significance aside from showing that the question of endowment in its relation to free speech at the universities and colleges is more or less before educators everywhere. In November, 1900, a case occurred at the Leland Stanford University which attracted attention not only in this country, but abroad. Professor E. A. Ross, occupant of the chair of economics, having championed the cause of Bryan in 1896, and issued a pamphlet entitled *An Honest Dollar*, was informed by President Jordan that his acts had displeased Mrs. Stanford and were considered unwise. It is said that Professor Ross was at that time practically placed on probation, and the name of his chair was changed from that of economics to the chair of social science. In 1900 he again espoused the cause of Bryan, and in his capacity of professor argued before his classes as well as at outside meetings against the expediency of Chinese immigration and in favor of municipal ownership of franchises. These and other acts on his part further displeased Mrs. Stanford, and President Jordan, so it is claimed, was asked to demand his resignation, which was immediately given. Dr. Jordan stating at the same time, however, that the demand entailed no complaint against Professor Ross on the ground of private character or academic teaching. Immediately afterward Professor George E. Howard, of the chair of history, and an intimate friend of Professor Ross, gave public evidence of sympathy with him, and delivered a fervid address before his class, which was taken as reflecting on the conduct of the university. Professor Howard continued to perform his duties for some time thereafter, and refused to comply with the request of President Jordan for an apology, stating that in his opinion no apology was necessary. His resignation was thereupon asked for and promptly given, and within a short time thereafter four other professors resigned out of sympathy with Professors Ross and Howard. The matter provoked no small amount of discussion and gave rise to considerable controversy. At the meeting of the American Economist Association in Detroit during December, 1900, the case of Dr. Ross brought about the appointment of a committee of three, composed of a professor each from Columbia, Yale, and Brown, to investigate the subject. The report, endorsed by fourteen other university professors of economics, upholds Professor Ross and condemns the course of the university as a denial to academic freedom of

speech. The alumni of Stanford University appointed a committee of investigation at the same time, whose report is contradictory to that of the economists, and formally supports the action of the Stanford authorities. President Jordan declined to submit his side of the case to the committee of economists, or to explain what appeared to be contradictory in his utterances, although he again called attention to the fact that the dismissal of Professor Ross cast no reflection upon his private character or his ability to teach.

President Harper, of Chicago University, was moved in his quarterly report, dated December 18, 1900, to make a statement of the faculty's opinion regarding freedom of speech, which has a special interest owing to certain charges which were made against his own university in the past. To the statement, adopted on June 30, 1899, by the members of the congregation, that the principle of freedom of speech has from the beginning been regarded as fundamental in the University of Chicago; that it can neither now nor at any time be called into question; that it should be clearly understood that the utterances which any professor may make in public are to be regarded as representing his own opinions only, President Harper adds that in Chicago no one in official position has at any time called an instructor to account for any public utterances which he may have made, and that no donor of funds for the university has ever by a single word or act indicated the dissatisfaction of the instruction given to students or with the public expression of opinion made by an official of the university. If such an instructor exercises his right to free speech in such a way as to do himself and the institution serious injury, it is, of course, the privilege of the university to allow his term to lapse until the end of the period for which it was made. Yet freedom of expression must be given the members of the university faculty even though it be abused, for, as it has been said, the abuse of it is not so great an evil as the restriction of such liberty. In what way a professor may abuse his privilege of freedom of expression, thus bringing reproach and injury to himself and institution, is answered by President Harper as follows: A professor is guilty of abuse of his privilege who promulgates ideas or opinions as true which have not been tested scientifically by his colleagues in the same department; who takes advantage of a class-room exercise to propagate the partisan views of one or another of political parties; who in any way seeks to influence his pupils or the public by sensational methods; who undertakes to speak authoritatively on subjects which have no relationship to his own department; who undertakes to instruct his colleagues or the public concerning matters of the world at large, in connection with which he has had little or no experience, or who fails to exercise that quality which, it must be confessed, in some cases a professor lacks—ordinarily called common sense. Yet he may do all these things and yet remain an officer in the university, his resignation being demanded when, in the opinion of those in authority, he has been guilty of immorality, or when for any reason he has proved himself to be incompetent to perform the service called for. He especially emphasises the fact that the public should be on its guard in two particulars: (1) The utterance of a professor, however wise or foolish, is not the utterance of the university, and (2) in passing judgment care should be taken that the facts are known.

Educational Organizations.—The fact that it is now possible to secure in certain departments of a number of American universities a training for the degree of Ph.D., which involves attainments not inferior to those demanded in the best German universities, is testimony to the rapid development of graduate schools in this country. With this development there has grown up a large number of important problems, the need for the consideration of which led to the formation in 1900 of the Association of American Universities (*q.v.*). Its organization is characterized by President Harper of Chicago University as one of the most important events in the educational world in fifty years. With this organization to father the interests of university education, and the New England, Middle States and Maryland, Central, Southern, and other associations of colleges and preparatory schools devoted to the consideration of the problems of the college proper and its relation to the secondary school, more rapid progress may be looked for in the future toward educational unification. This problem has already received much attention from the National Educational Association (*q.v.*), whose recommendations on this and other important questions have received the serious attention of the colleges during the past year or two.

Official Statistics.—The report of the Bureau of Education, issued in 1900, states that in 1898-99 the total number of students reported in collegiate, graduate, and professional departments of colleges and universities and in professional schools was 147,164, of whom 103,251 were pursuing studies in the liberal arts and applied science. The number of degrees conferred for work done was 15,087, of which 6860 were A.B., 2910 B.S., 1302 Ph.B., 1134 B.L., 1243 A.M., and 325 Ph.D. There were 735 honorary degrees conferred, of which 308 were D.D., 169 LL.D., and 157 A.M. There were 11 "honorary" Ph.D. degrees conferred, the institutions

conferring them being Hanover College, Amity College, Kansas Wesleyan University, Rust University, North Carolina College, and University of Wooster, which conferred one degree each, and Grove City College, which conferred five. The 325 Ph.D. degrees conferred for work done under the direction of the institution were granted by 48 institutions in 28 States. Fifteen students received the Ph.D. degree for work done at a minor college in Wisconsin; 14 at a university in Indiana, with a student body of less than 100, a library of 3000 books, and an income of \$4500; and 11 at a small Illinois college; at each of these institutions the Ph.D. might be gained *in absentia*. Among leading institutions in 1898-99, Johns Hopkins granted 42 Ph.D. degrees; Columbia, 34; Chicago, 31; Yale, 30; Harvard, 23; Pennsylvania, 20; Cornell, 7; Wisconsin, 5; Clark and Michigan, 4 each; California, Minnesota, Brown, Virginia, and Bryn Mawr, 3 each, and Princeton, 2.

The aggregate college income for 1898-99 was, exclusive of gifts, \$27,739,154, of which nearly \$11,000,000 was derived from tuition and other student fees. The total value of property amounted to \$342,888,361, of which \$154,120,590 represented endowment funds and the remainder the value of grounds, buildings, and equipment. For other articles on education, see CATHOLIC COLLEGES, CONFERENCE OF THE; EDUCATIONAL ASSOCIATION, AMERICAN; EDUCATION IN THE UNITED STATES; UNIVERSITIES, AMERICAN, ASSOCIATION OF; paragraphs on Education in the articles on the several States and countries, and the various articles on colleges.

Gifts of the Year 1900.—According to statistics prepared by the *Chicago Tribune*, the total amount of money received in the form of gifts by educational and charitable institutions during the year 1900 was \$62,461,304, of which \$34,932,644 was given to colleges and schools. This sum is over twice as large as that given to charities, sixteen times as much as was given to museums and art galleries, four times larger than that given to church organizations and nearly as much more than that given to libraries. The more important gifts to the universities and colleges during the year are given below. Washington University, St. Louis, received an endowment of \$5,000,000 from Samuel Copples and R. A. Brookings; the University of Chicago received \$2,675,400, of which John D. Rockefeller contributed \$2,000,000; Clark University received \$2,350,000 under the terms of the will of its founder, Jonas G. Clark; Yale received \$1,341,912, including gifts of \$150,000 from the Pinchot family and from W. L. Lampson; Brown received \$1,000,000; University of Pennsylvania over \$1,000,000; Syracuse received \$796,000, of which the greater part was the gift of Lyman C. Smith; Harvard received \$710,500, including gifts of \$100,000 from Caroline B. Croft, Boston, and Dorman B. Eaton, New York. For its endowment Drake University received \$532,000, of which \$500,000 was from F. M. Drake. Of the \$492,000 acquired by Columbia, the larger part came from John D. Rockefeller, Dorman B. Eaton, and William E. Dodge. Lincoln University received \$400,000 from James Milliken, Decatur, Ill.; Oberlin, \$360,000 from various sources. Gifts to Beloit aggregated \$350,000, of which \$200,000 was from F. G. Logan, Chicago; to Wellesley, \$318,000, J. D. Rockefeller being the principal donor. Lehigh University obtained \$300,000 from Frank Williams, Johnstown. Vanderbilt University \$250,000 from Mary J. Farman, Nashville. The figures here given may not in all cases agree with those contained in the separate articles on colleges, since the latter are for the academic year 1899-1900. The Methodist twentieth-century thank offering realized \$3,142,532.

UREINE. Dr. William O. Moor claims to have discovered a new substance in urine. It is a liquid, and is twice as abundant as urea. He calls it ureine. Its isolation is the result of a very complicated process. Its specific gravity is 1.270. It mixes freely with water and with alcohol, and Moor believes it belongs to the alcoholics of the aromatic series. It disintegrates at a temperature of 80° Centigrade, and it has a remarkable power of absorbing oxygen. He found it constituted 6 per cent. by volume of the urine of one case of diabetes and 2.3 per cent. by volume of the urine in a case of pregnancy. Moor states that ammoniacal fermentation of urine cannot occur without it, except in the presence of considerable heat.

URUGUAY, the smallest republic of South America, lies on the Atlantic coast, between Brazil and Argentina. The capital is Montevideo.

Area and Population.—The republic comprises 19 departments, of which the total estimated area is 72,110 square miles. In 1899 a decree was issued providing for a census of the country in March, 1900. According to this count, the inhabitants outside of Montevideo numbered 599,061. A complete census, however, was not obtained, and the authorities deemed it advisable to make an addition of 8 per cent., and, accordingly, the number is placed at 647,313. On January 1, 1900, the estimated population of Montevideo was 252,713, making a grand total for the republic of 900,026.

Government.—By the constitution the chief executive authority is vested in a president, who is elected for a term of four years and is assisted by a ministry of

five departments. The president in 1900 was Señor Juan Lindolfo Cuestas, elected March 1, 1899. The legislative power consists of a Senate and Chamber of Deputies, members of the former being chosen, one for each department, for six years by an electoral college, and of the latter for three years in the proportion of one deputy for each 3000 male adults able to read and write.

Finance.—Revenue is derived chiefly from customs, and the largest item of expenditure is interest on the public debt. The total revenue for the fiscal year 1900 was estimated at 15,977,990 pesos. Statistics of expenditure are not available, but the budget estimates for the fiscal year 1900 were 15,969,698 pesos. The finances of the municipality of Montevideo are not included in the foregoing figures. According to the *Bulletin* of the Bureau of American Republics, the public debt is 127,159,529 pesos. The monetary standard is gold, but there is no gold coin in circulation; the value of the silver peso in United States money is \$1.034.

Industries and Commerce.—The most important industry is sheep and cattle raising, but agriculture is being developed; and in 1900 the government for the first time issued an agricultural report, showing the production of cereals for the year 1899-1900. The principal crop was wheat, of which there was a yield of 187,553 metric tons from 377,988 hectares (933,908 acres). The estimated value of Uruguayan live stock is over 70,000,000 pesos. The estimated numbers in 1897 were: Sheep, 14,448,000; cattle, 4,959,000; horses, 358,000; mules, 13,000. The wool clip for the year 1899-1900 was about 96,000,000 pounds. With the exception of a small amount of gold exploitation, mining has not been developed. Besides gold, there have been found silver, copper, lead, magnesium, and lignite.

The principal exports are wool, jerked beef, hides and skins; the chief imports are machinery and raw materials, textiles and wearing apparel, comestibles, liquors, and tobacco. The chief countries importing to Uruguay are, in the order of their importance, Great Britain, Argentina, France, Germany, Italy, Spain, the United States. The values in pesos of the imports and exports for the fiscal year 1899 were: Imports, 25,551,788; exports, 36,574,164.

Communications.—Difficulties of communication are less in Uruguay than in most Latin-American countries; there are some 5350 miles of national and departmental roads and several hundred miles of navigable affluents of the Uruguay River. According to the president's message to congress, reported in the *Bulletin* of the Bureau of American Republics for April, 1900, the total length of railways in operation in the republic in 1899 was 1605 kilometres (997 miles), and the total length under construction 1909 kilometres (1186 miles).

Religion and Education.—Roman Catholicism is the state religion, but all other faiths are tolerated. The condition of education in Uruguay, while by no means advanced, is generally regarded as better than that of most of the Latin-American countries. Primary instruction is nominally compulsory. In 1899 there were 563 public primary schools, 1104 teachers, an enrolment of 51,633 pupils, and an average attendance of 37,685. There are a number of normal schools, a government school of arts and trades, with about 250 students, a military college, with about 40 students, a university at Montevideo, under government control, with about 90 professors and 700 students, and many seminaries under the direction of the Catholic clergy. In 1900 the number of newspapers and periodicals in the republic was stated to be 204, of which 109 were published in Montevideo. See HARBOR IMPROVEMENTS.

UTAH, a western State of the United States, has an area of 84,970 square miles. The capital is Salt Lake City. Utah was organized as a Territory September 9, 1850, and admitted as a State January 4, 1896.

Mineralogy.—The estimated production of gold during 1900 was 205,000 fine ounces, value, \$4,237,736; of silver, 9,500,000 fine ounces, value, \$5,795,000. Utah ranked third among the States in the production of silver, and fifth in the production of gold. During 1899, 25 mines produced 786,049 short tons of coal, the spot value of which was \$997,271. Carbon County produced 95 per cent. of the total output of the State. Quarrying yielded five kinds of stone—namely, granite, sandstone, slate, marble, and limestone, but all in small amounts, the total value being only \$43,662. The production of copper in 1899 aggregated 9,310,344 pounds. The Gilsonite mines of Utah are situated in the eastern part of the State, in Emery and Wasatch counties. Gilsonite, or elaterite, as it is sometimes called, is a material intermediate in character between petroleum and asphaltum. It is used in the manufacture of varnishes, for water-proofing, and as a substitute for hard rubber, and the demand for it is steadily growing. The output from the Utah mines in 1900 was about 2500 tons.

Agriculture.—The following shows the production and value of the principal crops for 1900: Corn, 169,180 bushels, \$106,583; wheat, 3,697,106 bushels, \$2,033,408; oats, 918,214 bushels, \$404,014; barley, 217,686 bushels, \$119,727; rye, 59,202 bushels, \$30,785; potatoes, 649,000 bushels, \$311,520; hay, 509,855 tons, \$4,053,347. The *Bulletin* of the National Association of Wool Manufacturers estimated the wool clip

of 1900 as follows: Number of sheep, 2,261,917; wool, washed and unwashed, 14,136,981 pounds; scoured wool, 4,947,943 pounds.

Industries.—Since 1895 great activity in the beet-sugar industry has been manifested in the United States, especially in Michigan, California, and Utah. The exceptionally favorable conditions for beet production in Utah have led the Utah Sugar Company to increase its manufacture by means of outlying stations, according to the French system, devised by Linard. This company now has two auxiliary factories, and is building a third for the crop of 1901-02. In 1898 there were 2 establishments for the manufacture of beet sugar, with a combined daily capacity of 750 tons of beets; in 1899, 3 establishments, with a daily capacity of 1100 tons of beets; and in 1900, 4 establishments, with a daily capacity of 1450 tons of beets. The percentage of commercial and business failures has for the past three years been much higher in Utah than in any other State, being 3.65 per cent. in 1898, 4.23 per cent. in 1899, and 4.05 per cent. in 1900. During 1900, out of 3777 business concerns in the State, 153, having liabilities aggregating \$978,482, failed.

Railways.—The new railway construction reported for the calendar year 1900 amounted to 11.20 miles, giving the State a total mileage of 1592.33.

Banks.—On October 31, 1900, there were 10 national banks in operation, 6 in liquidation, and 1 insolvent. The active capital aggregated \$1,600,000; deposits, \$5,556,021; circulation outstanding, \$1,026,509; and reserve held, \$2,524,486. State and private banks, June 30, 1900, numbered 20, and had capital, \$2,200,000; deposits, \$17,434,051, and resources, \$29,643,138; and stock savings banks, 9, with capital \$606,800; depositors, 6522, deposits, \$2,252,124, and resources, \$3,450,538. The exchanges at the clearing house at Salt Lake City for the year ending September 30, 1900, aggregated \$121,450,448, an increase over the preceding year of \$8,338,888.

Education.—The school census of 1899 showed a total enumeration of 84,419 children between the ages of 6 and 18. The enrolment in the public schools was 71,906, and the average daily attendance, 52,208. There were 1419 teachers, 689 buildings used as schoolhouses, and public school property valued at \$2,801,556. The total school revenue was \$1,066,544; and expenditures, \$991,973, of which \$579,346 was for teachers' and superintendents' salaries. The average expenditure per pupil for the whole school year was \$19. There were 4 public high schools, with 34 teachers and 941 secondary students; 12 private secondary schools, with 66 teachers and 1093 secondary students; 1 public normal school, with 2 teachers and 157 students in normal courses, and 2 private ones, with 31 teachers and 507 students in normal courses. Four colleges for men and for both sexes reported 59 professors and instructors, 1259 preparatory and collegiate students, and a total income of \$88,855; and 1 school of technology reported 23 professors and instructors, 479 students in all departments, and a total income of \$60,393. No professional schools were reported in 1899.

Population.—According to the United States census, the population in 1890 was 207,905; in 1900, 276,749; increase for the decade, 68,844, or 33.1 per cent. Salt Lake City is the largest city, with a population in 1900 of 53,531.

Robert's Debarment from Congress.—On January 25, the sentiment against the seating of Brigham H. Roberts in Congress, for the reason that he was an avowed polygamist, culminated in his exclusion from the House of Representatives, by a vote of 268 to 50. On January 20, the special committee appointed to investigate the matter presented to the House a unanimous report as to the facts in the case, and majority and minority reports upon the course which the House should pursue in the premises. The committee as a whole found that Mr. Roberts had been for more than seven years a citizen of the United States, and an inhabitant of Utah, and that he was elected to the House in a regular and proper manner. They found also that he had married three women, in or about the years 1878, 1885, and 1897 respectively, and that he had since then lived with each and all of them in the habit and repute of a husband. Upon these findings of fact, six of the special committee recommended that Mr. Roberts be excluded from the House without being permitted to take oath of office, while two of the committee asked that Mr. Roberts be admitted to his seat in the House on his *prima facie* right thereto, and that he be then expelled. The difference of opinion in the committee arose from a difference of interpretation of the sections of the Constitution bearing upon elections to the House. The constitution provides negatively that a person shall not be a representative "who has not attained to the age of 25 years, and been seven years a citizen of the United States and who shall not, when elected, be an inhabitant of that State in which he shall be chosen." Affirmatively the Constitution provides that "each house shall be the judge of the elections, returns and qualifications of its own members." It was admitted by those advocating the exclusion of Mr. Roberts that he possessed the qualifications required by the Constitution; but they claimed that his possession of these negative requirements gave him no *prima facie* right to his seat, in view of the fact that the House had affirmative right under the Constitution

to judge finally of the qualifications of its members. So that while a State was authorized to elect as a federal representative any man who fulfilled certain conditions, the House could debar such representative, if in their opinion the welfare of the entire Union demanded this. To show that Mr. Roberts's debarment was thus demanded and justified, the majority report adduced the following facts: 1. Mr. Roberts violated an act of Congress passed in 1882, making polygamy a felony in the Territories and disqualifying whoever disregarded the act from voting or holding office under the United States. 2. Mr. Roberts notoriously and continuously violated the law of the land, in face of the decisions of the Supreme Court and of the amnesty proclamations of the Presidents; and he was and is at war with a fundamental institution of the country and with the statutes appertaining thereto. 3. Mr. Roberts's election was an explicit violation by Utah of the understanding that polygamy therein should cease; upon which understanding Utah was admitted to Statehood.

Upon the main question, as to whether the House had the legal right as well as the actual power to debar a representative for other reasons than those explicitly specified in the Constitution, the minority report sharply dissented from the views of the majority. The minority asserted that no court decision upheld those who contended that Congress could impose other qualifications upon members than the Constitution imposed; and that the contention was a very dangerous one, because if one Congress was permitted to impose one qualification, another Congress could impose another, and so the power of a majority in the House to work injustice and foster demagogism would have no limit. The minority report stated further that even if it were admitted that Congress could constitutionally add a qualification to those enumerated in the Constitution, still the congressional law of 1882, which was quoted by the majority as disqualifying Mr. Roberts, could not so disqualify him; for the law read that no polygamist should be entitled to hold office "under the United States." But a member of the House did not hold office "under the United States," and assuredly a law which expressly applied to a Territory could not have referred in any of its provisions to a congressional office. In reference to the contention that Utah in electing Mr. Roberts violated the understanding on which it was admitted to Statehood, the questions were asked—and remained unanswered—in precisely what this understanding consisted, what was its legal status, and what, if any, were the penalties which could be imposed by law for violation of the understanding? Because of these constitutional objections to excluding Mr. Roberts, the minority proposed that he be seated and then expelled, under that section of the Constitution which provides that "each House may determine the rules of its proceedings, punish its members for disorderly behavior, and, with the concurrence of two-thirds, expel a member." But to this proposal there were counter-objections. In the first place, it was not entirely clear that the House was authorized to expel a member except for "disorderly" and allied offences, and in the second place, it was not clear at all that the House could expel a member for offences committed before the member became a member. On January 23, the House having taken up the consideration of the reports, Mr. Roberts spoke in his own behalf. He declared that under the Constitution he could neither be excluded nor expelled from the House. If he was not allowed his seat it would be because of sectarian clamor, and all the shame attached to the case would cling to the House. Mr. Roberts said that any lawlessness he had been guilty of had resulted from the religious convictions instilled in him from boyhood. Luther, he continued, had conceded that polygamy was not contrary to the Scriptures, and if it was at the present time held to be a crime, it was a legal not a moral one. Though the Mormons had now abandoned polygamy, they had practised it as part of the religion they believed came from God. Two days later the matter having been brought to a vote, the House defeated by 244 to 81 the proposition to seat and then expel Mr. Roberts. The House, by vote, then declared his seat vacant. The legal arguments for the latter method of procedure probably had little more weight with the House than the question of expediency. For to expel Mr. Roberts would have required more time, as well as a two-thirds vote, while a majority vote was sufficient to exclude him.

Elections.—At the State election in 1900, the Republican candidate for governor, Wells, received 47,600 votes, and Moyle, the Democratic nominee, received 44,447 votes. The Republican plurality was thus 3153. The election resulted in a change in the congressional representation of Utah. George Sutherland (Rep.) was elected congressman-at-large, to succeed B. H. Roberts (Dem.). The State Legislature in 1900 consisted, in the Senate of 2 Republicans and 16 Democrats; and in the House, of 15 Republicans, 26 Democrats, and 4 Fusionists. In 1901 the Legislature will consist, in the Senate, of 8 Republicans and 10 Democrats; and in the House, of 29 Republicans and 16 Democrats.

In the national election, McKinley received 47,137 votes, and Bryan received 44,949. In 1896, McKinley received 13,491, and Bryan received 64,607. Therefore, from

a Democratic plurality of 51,033 in 1896, Utah changed to a Republican plurality of 2133 in 1900.

State Officers and National Representatives.—State officers for 1900: Executive—governor, Heber M. Wells; secretary of state, J. T. Hammond; attorney-general, A. C. Bishop; auditor, M. Richards, Jr.; treasurer, James Chipman; superintendent of education, J. R. Park.

Supreme Court: Chief Justice, G. W. Bartch (Rep.); justices, J. A. Miner (Rep.), and R. N. Baskin (Dem.); clerk, L. P. Palmer (Rep.).

State officers for 1901: Executive—governor, Heber M. Wells; secretary of state, J. T. Hammond; treasurer, J. D. Dixon; auditor, C. S. Tingley; adjutant-general, M. A. Breeden; superintendent of education, A. C. Nelson; commissioner of insurance, the secretary of state, *ex officio*.

Supreme Court: Same as for 1900.

Congressional representative for 1900 (56th Congress): William H. King (Dem.), from Salt Lake City.

Congressional representative for 1901 (57th Congress): George Sutherland (Rep.), from Salt Lake City.

Senators for 1900 (56th Congress): J. L. Rawlins (until 1903), Democrat, from Salt Lake City; one vacancy.

Senators for 1901 (57th Congress): Same as for 1900.

VACCINATION. See SMALLPOX AND VACCINATION.

VANDERBILT UNIVERSITY, Nashville, Tenn., founded 1873, had during the academic year 1899-1900 a faculty of about 100 professors and instructors, and a student body, omitting duplicated names, of 771, distributed as follows: Academic, 193; engineering, 32; biblical, 81; law, 36; medical, 284; pharmaceutical, 42; dental, 140. Among these were 44 students doing graduate work. The present amount of productive funds is \$1,250,000, and the income for the year, \$130,000. The university library contains about 30,000 volumes. Kissam Hall, almost completed at the close of 1900, is the gift of W. K. Vanderbilt. The twenty-fifth anniversary of the opening of the university was celebrated on October 21-23 with a large attendance of delegates from other institutions.

VARIATION. See BIOLOGY.

VASSAR COLLEGE, Poughkeepsie, N. Y., founded 1861. The more important gifts during the past year were \$10,000 for the library from the alumni; the New England building for biology and physiology, \$50,000; and the Swift infirmary. Plans are nearly ready for a new chapel, on which it was expected work would begin in the spring of 1901. A new dormitory to accommodate 100 students is being erected by the college. The library increase during the year was 5000 volumes, bringing the total number of books to 35,000. The faculty numbered 65 and the student body 700, as follows: Graduate students (for degree M.A.), 9; seniors, 142; juniors, 117; sophomores, 166; freshmen, 248; specials, 18. The total income for the year was \$377,000, and the present total endowment is \$2,420,000.

VEGETABLE PATHOLOGY AND PHYSIOLOGY. See BOTANY.

VENEZUELA, a republic of South America bordering the Caribbean Sea. The capital is Caracás.

Area and Population.—In 1881 Venezuelan territory was reapportioned into eight states, eight territories, and a federal district, of which the total area has been estimated at 593,943 square miles. By the arbitration award of October 3, 1899, Venezuela lost nearly 60,000 square miles to British Guiana; accordingly, the present area of the country may be said to be about 535,000 square miles. In 1899 a law was enacted looking to the re-establishment of the twenty states that constituted the Venezuelan union of 1864. In 1894 the estimated population was 2,444,816, the number of foreign-born inhabitants being reported as follows: 13,558 Spaniards, 11,081 Colombians, 6154 English, 3729 Dutch, 3179 Italians, 2545 French, 962 Germans. The estimates for 1894 include the inhabitants of the territory awarded to Great Britain.

Government.—By the constitution the chief executive authority is vested in a president, who is elected for two years, is ineligible for the ensuing term, and is assisted by a cabinet of 6 members and a federal council of 19 members. The president in 1900 was General Cipriano Castro, who, after his successful rebellion against the government of President Ignacio Andrade, assumed the executive in October, 1899. The legislative power devolves upon a congress consisting of a senate and a house of representatives, members of the former being elected by the state legislatures to the number of three from each of the eight states, and of the latter by popular vote in the nominal proportion of one representative for each 35,000 inhabitants. Territorial administration has been controlled by the federal government, but the states have had a rather high degree of autonomy.

Territorial Reapportionment.—About the first of August, 1900, a legislative decree regarding the political divisions of the republic was promulgated; its principal articles are as follows (the translation being that published in the October *Bulletin* of the Bureau of American Republics):

"Art. I. Until the national assembly decrees a fundamental charter for the republic the states which the decree of October 28, 1899, declared independent and united to form the Venezuelan federation, and which are now called Apure, Aragua, Barcelona, Barinas, Barquisimeto, Carabobo, Carácas, Cojedes, Coro, Cumaná, Guárico, Guyana, Maracaibo, Margarita, Maturín, Mérida, Portuguesa, Táchira, Trujillo, and Yaracuy, are constituted, with the exception of the state of Margarita, which provisionally and for certain reasons shall be considered as federal territory, into fifteen political departments, to wit: The state of Apure, which shall include Apure and Barinas; the states of Aragua, Barcelona, Carabobo, which shall be composed of Carabobo and the former Nirgua department; the states of Coro, Guárico, Guyana, and Lara, which shall be composed of Barquisimeto and Yaracuy (with the exception of the department of Nirgua); the state of Carácas, which shall be renamed Miranda; the states of Maracaibo, Mérida, and Sucre, which shall be composed of Cumaná and Maturín; the states of Táchira, Trujillo, and the state of Zamora, which shall be composed of Portuguesa and Cojedes. And these are constituted so as to form a free, sovereign, and independent nation, under the name of the United States of Venezuela.

"Art. II. The boundaries of these states shall be determined by those which were declared of the former provinces by the law of territorial division of 28th of April, 1856.

"Art. V. In so far as they do not interfere with the political régime now in force, the sections—i.e., the states, including Margarita—shall continue to be governed by the same laws as are at present in force. . . .

"Art. VI. The president shall appoint the provisional governors of each one of the states of the union."

Finance.—The monetary standard of Venezuela is gold, but the government is on a paper basis. The unit of value is the bolivar, which is equivalent to the franc, being worth 19.3 cents in United States money. Revenue accrues chiefly from customs, which for the fiscal year 1900 were estimated at 26,000,000 bolivars. The revenue and expenditure in bolivars have been estimated as follows for the last two fiscal years: Revenue, 1899, 34,542,000; 1900, 38,877,480; expenditure, 1899, 34,542,000; 1900, 38,877,480.

Industries and Commerce.—During 1900 the industries and commerce of Venezuela were retarded by the political disturbances and uncertainty existing in the country. The principal occupations of the people are agriculture and cattle-raising. Manufacturing industries are practically unknown. The principal crop is coffee, Venezuela ranking next to Brazil among the coffee-producing countries of the world. The Venezuelan production for 1898 was about 116,400,000 pounds. Other products are sugar, cacao, and cereals, while in the "forest zone" the inhabitants take the products of the wild rubber trees, the cinchona trees, the copaifera, and the vanilla and tonga plants. The government encourages immigration, to which end small grants of the public lands are offered to new settlers. During 1900 several concessions were made for forest exploitation, rubber gathering, telegraph construction, pearl, sponge, and turtle fishing, etc.

Many metals and minerals are found, including gold, silver, copper, iron, tin, lead, sulphur, asphalt, coal, salt, kaolin, and petroleum. As many of the richest mines are situated in regions remote from the centres of population and are difficult of access, the rapid development of this important industry is retarded. The *Bulletin* of the Bureau of American Republics notes the transfer of a number of asphalt properties during 1900, and adds: "The demand for asphalt mines has been very active and the best producing deposits have greatly increased in value." For the fiscal year 1898 the total commerce was stated to be \$34,751,000. In the latter year the coffee export amounted to 53,446 tons, about half being shipped from Maracaibo, and nearly all of the remainder being almost equally divided between La Guayra and Puerto Cabello. In 1898 the cacao export amounted to 5687 tons, chiefly from La Guayra; hides and skins, 3454 tons; rubber, 580 tons; Peruvian bark, about 13,000 kilogrammes. The foreign trade is chiefly with the United States, France, Germany, and Great Britain. The commerce, stated in American money, with the United States has been as follows for the last two calendar years: Imports from United States, \$2,641,390 and \$3,016,762; exports to United States, \$5,669,925 and \$6,529,858.

Communications.—Roads are few and in bad condition, and lake and river transportation is increasing in importance. In 1899 there were 529 miles of railway in operation and about 1000 miles projected or under construction. The length of telegraph lines in 1895 was reported at 3882; since then, however, a considerable amount of line has been strung. In 1898 there were 214 post-offices.

Religion and Education.—Roman Catholicism is the state religion, and, though freedom of conscience is guaranteed, other church organizations are not allowed. Although primary instruction is free and nominally compulsory, education is in a backward condition. There are about 1450 national primary schools and 150 state primary schools, with perhaps 100,000 pupils enrolled. In addition there are 4 normal schools, 1 school of arts and trades, and 9 "barrack" schools, while for higher education there are 2 so-called universities, 22 national colleges, 26 private colleges, 11 national colleges for girls, 1 polytechnic school, 1 nautical school, 1 school for fine arts, and several for music. The teachers and students at the institutions for higher education have been reported at about 450 and 4900 respectively.

Insurrectionary Movements.—The rebellion against the government of President Ignacio Andrade, led by General Cipriano Castro, ended in October, 1899, in the flight of the president and the assumption of the executive power by Castro. But almost immediately one of the latter's supporters, General José Manuel Hernandez, stirred up an insurrection in his own behalf, and in January, 1900, defeated the government troops at San Fernando, capital of Ipire, and in February near Coro, capital of Falcon, and at Puerto Chinchirichi, near Puerto Cabello. Hernandez has been concerned in the many revolutionary movements of Venezuela during the last thirty years. His supporters are largely Conservatives. Early in 1900 it was rumored that another insurrection, headed by General Pulido, a Liberal and minister of war, was developing against the Castro government. This, however, was denied by Pulido. The Hernandez rebellion made little progress during the spring, and in April a victory for the government troops was announced, but in the following month it was reported that the rebels, 2000 strong, had occupied Calabozo, capital of Guarico. On May 27, however, Hernandez was defeated and captured by General Davila commanding the government troops. The insurrection thus came to an end. In July peace was officially proclaimed throughout the republic, and the political prisoners were released. But at the close of 1900 there were reports of an insurrection in the state of Bermudez, which lies in the eastern part of the country north of the Orinoco River.

Other Events of 1900.—An unsuccessful attempt to assassinate President Castro on February 27 caused a popular demonstration in his favor. On February 28 a British deputy consul was assassinated at Bolivar, where a state of political anarchy prevailed.

Earthquake shocks occurred in Venezuela on June 9 and July 15, 1900. On the former date damage was done at Cariaco, Cumaná, and Cumanacoa, and on the latter the disturbances were felt in Carácas. A shock far more severe than either of these did much damage in Carácas and other parts of northern Venezuela on October 29. The town of Guarenas was destroyed, and in Carácas many buildings, including a large number of churches and the British and American legations, were either wrecked or badly damaged. Fifteen persons were killed and many injured, among the latter being President Castro and Mr. W. H. D. Haggard, the British minister.

In October, 1900, the Venezuelan government named commissioners to act jointly with British commissioners in the demarcation of the boundary line between the republic and British Guiana, in pursuance of the decision of the Paris arbitration conference, rendered on October 3, 1899. It was expected that the work of fixing the boundary would be a difficult task, which would not be completed in less than a year.

Late in the year there was a rumor of negotiations between Venezuela and Germany looking to the lease by the latter of a port on the island of Margarita. Such a measure would probably meet the protest of the United States and, it was said, would be liable to bring about a revolution in Venezuela. But revolutions in Venezuela seem to be the normal state of affairs, and in any event will probably recur at appropriate intervals with or without the aid of external stimulus.

In 1900 there was a rise in asphalt values, and toward the close of the year reports came that President Castro, in order apparently to drive a better bargain, had revoked the New York & Bermudez Company's concession for working the asphalt deposits in the state of Bermudez, and had granted a similar concession to another American company. The former company protested, and, though the Venezuelan supreme court decided that the question was one for the judiciary and not the executive to settle, Castro threatened to expel the operatives by force. Appeal was taken by the company to the United States authorities, and at the end of the year international complications seemed not improbable.

VERMONT, a New England State of the United States, has an area of 9565 square miles. The capital is Montpelier. Vermont was admitted to the Union, March 4, 1791.

Mineralogy.—In 1899 Vermont retained her position as the second of the States in the output of quarry products. Four kinds of stone were produced, and each of

these showed an advance in value over the production of the preceding year. The values for 1899 were: Marble, \$2,241,806; granite, \$1,212,967; slate, \$872,673, and limestone, \$282,173. The State fell from first rank to third in the production of granite, being outstripped by both Massachusetts and Maine, but continued to hold first place as a producer of marble.

Agriculture.—The following shows the production and value of the principal crops for 1900: Corn, 1,939,080 bushels, \$969,540; wheat, 81,992 bushels, \$63,954; oats, 3,719,677 bushels, \$1,339,084; barley, 500,811 bushels, \$260,422; rye, 47,924 bushels, \$29,234; buckwheat, 238,375 bushels, \$119,188; potatoes, 3,305,244 bushels, \$1,322,098, and hay, 1,066,524 tons, \$11,785,090. The *Bulletin* of the National Association of Wool Manufacturers estimated the wool clip for 1900 as follows: Number of sheep, 164,858; wool, washed and unwashed, 1,112,792 pounds; wool, scoured, 489,629 pounds. Live stock January 1, 1900, comprised: Horses, 84,388, valued at \$4,514,500; milch cows, 268,886, \$8,577,463; other cattle, 132,450, \$3,100,074; sheep, 169,259, \$611,363.

Commerce.—During the fiscal year ending June 30, 1900, the imports of merchandise in the districts of Vermont and Memphremagog aggregated \$6,373,432, an increase in a year of \$1,997,012; and the exports, \$11,831,449, an increase of \$1,805,571. The movement of gold and silver was: Imports, \$43,648; exports, \$198,299, making the total foreign trade of the year \$18,446,828, an increase over 1898-99 of \$4,036,766.

Railways.—The new railway construction reported for the calendar year 1900 amounted to 27.60 miles, giving the State a total mileage of 1029.46.

Banks.—On October 31, 1900, there were 48 national banks in operation, 15 in liquidation, and 5 insolvent. The capital stock aggregated \$6,760,000; circulation outstanding, \$4,204,392; deposits, \$11,170,932, and reserve held, \$4,112,460. The mutual savings banks June 30, 1900, numbered 41, and had depositors, 118,354; deposits, \$38,290,394, and resources, \$41,354,348.

Finances.—Receipts for the two years ending June 30, 1900, were \$1,493,270, and disbursements, \$1,513,541. At the close of the fiscal year the State's resources, including a cash balance of \$117,161, were \$541,574; liabilities aggregated \$208,658, leaving a working balance of \$332,916.

Insurance.—The following statement gives comparative statistics of fire insurance for 1899 and 1900:

Items.	1899.	1900.
Risks written.....	\$57,741,791	\$68,742,886
Premiums received.....	840,848	840,638
Losses incurred.....	544,398	595,294

Education.—The school census of 1899 showed a total enumeration of 89,396 persons between the ages of 5 and 21. The enrolment in the public schools was 66,429, and the average daily attendance, 48,014. There were 3798 teachers, 1821 buildings used as schoolhouses, and public school property valued at \$1,800,000. The total school revenue was \$668,813, and expenditures, \$974,611, of which \$647,694 was for teachers' and superintendents' salaries. The average expenditure per pupil for the whole school year was \$20.30. There were 54 public high schools, with 135 teachers and 3169 secondary students; 21 private secondary schools, with 91 teachers and 1346 secondary students; and 3 public normal schools, with 16 teachers and 261 students in normal courses. Three colleges for men and for both sexes reported 53 professors and instructors, 456 collegiate and graduate students, and a total income of \$108,952. The only professional school reported was a medical school, with 25 instructors and 210 students.

Population.—According to the United States census, the population in 1890 was 332,422; in 1900, 343,641; increase for the decade, 11,219, or 3.3 per cent. The largest cities are Burlington, with 18,640, and Rutland, with 11,499 inhabitants.

Elections.—At the State election of 1900 William W. Stickney, the Republican nominee for governor, was elected by a plurality of 31,312, receiving 48,441 votes, while John H. Senter, the Democratic nominee, received 17,129 votes. The congressional representatives were both changed, David J. Foster (Rep.) succeeding H. Henry Powers (Rep.) in the first district, and Kittredge Haskins (Rep.) succeeding William W. Grout (Rep.) in the second district. In the State Legislature of 1900 there were 30 Republicans in the Senate and 203 Republicans, 41 Democrats, 1 Prohibitionist, and 1 Independent in the House. In 1901 the Legislature will consist of 30 Republicans in the Senate and 196 Republicans, 48 Democrats, and 1 Independent in the House. At the national election McKinley had 51,127 votes, and Bryan had 10,179 votes. In 1896 McKinley had 50,991 votes, and Bryan had 10,607 votes.

State Officers and National Representatives.—State officers for 1900: Executive—governor, E. C. Smith; lieutenant-governor, Henry C. Bates; secretary of state,

Frederick A. Howland; treasurer, J. L. Bacon; auditor, Orion M. Barber; adjutant-general, T. S. Peck; superintendent of education, Mason S. Stone—all Republicans.

Supreme Court: Chief justice, Russell S. Taft; assistant justices, Loveland Munson, J. W. Rowell, J. H. Watson, H. R. Start, L. H. Thompson, and J. M. Tyler; clerk, M. E. Smilie—all Republicans.

State officers for 1901: Executive—governor, W. W. Stickney; lieutenant-governor, M. F. Allen; secretary of state, F. A. Howland; treasurer, J. L. Bacon; auditor, O. M. Barber; adjutant-general, William H. Gilmore; superintendent of education, W. E. Ranger—all Republicans.

Supreme Court: Same as for 1900, with Thompson omitted.

Congressional representatives for 1900 (56th Congress): H. Henry Powers and W. W. Grout—both Republicans.

Congressional representatives for 1901 (57th Congress): David J. Foster (Burlington) and K. Haskins (Brattleboro)—both Republicans.

Senators for 1900 (56th Congress): William P. Dillingham (until 1903), from Waterbury; Redfield Proctor (until 1905), from Proctor—both Republicans.

Senators for 1901 (57th Congress): Same as for 1900.

VICTOR EMMANUEL III., who succeeded to the throne of Italy on the assassination of his father, King Humbert I., July 29, 1900, took the oath of office August 11, 1900. He was born November 11, 1869. He received his education under the tutelage of Colonel Osio, a severe disciplinarian. Completing his military education when he was 20, he was given command of the Division of Naples, and subsequently held other military commands. In 1896 he married the Princess Hélène of Montenegro, the beautiful daughter of the reigning prince, who is a great favorite in her adopted country. Though not of strong physique, the new king is intellectually superior to his father. He has already proved himself a man of character, instead of the misanthropic recluse which he was thought to be. He has declared his intention to conduct the affairs of Italy as his father did, in a liberal and constitutional manner. The spirit of his proclamation to the people is the wish to protect the unity and independence given to the Italians by Victor Emmanuel II. and jealously guarded by his father, King Humbert I.

VICTORIA, the smallest state of the Australian commonwealth under the constitution taking effect January 1, 1901, has an area of 87,884 square miles. Its population at the end of 1899 was estimated at 1,179,029, including 9400 Chinese and 565 aborigines. The capital is Melbourne, with a population of about 477,770. The agricultural returns for 1899 give the principal crop of that year in bushels as follows: Wheat, 19,581,000; oats, 5,523,000; barley, 1,112,000; hay, 723,000 tons. Cattle raising is a very important branch of agriculture, and a considerable portion of the colony is devoted to pastures. The mining industry is also in a high state of development. The output of gold for 1899 amounted to 854,500 ounces, and the total value of the other minerals is given as £2,094,054. The manufacturing industries show a steady growth, and the number of establishments at the end of 1899 was 3027, employing over 60,000 hands. The trade of Victoria is mostly with Great Britain and the other states of the commonwealth. The staple exports are wool, gold, butter and cheese, hides and skins, and frozen meats. The principal imports are cotton, woollens, sugar and molasses, and timber. The exports and imports for 1899-1900 amounted to £18,567,780 and £17,952,894 respectively. Of the imports, Great Britain was credited with £4,852,966, and of the exports, with £6,477,668. The revenue of Victoria, which amounted to £7,463,117 in 1899-1900, is chiefly derived from taxation and state domains; the expenditure for the same year amounted to £7,331,385. The public debt at the end of the year was £48,354,277. The railways, which are owned and controlled by the state, had a total mileage of 3143 at the end of 1899. The cost of the lines up to 1899 was £38,974,410, constituting a considerable part of the state debt. There were in 1899, 6747 miles of telegraph lines, with 830 stations and 13,794 miles of telephone wire, all owned by the state. Victoria is administered by a governor, who is appointed by the crown and assisted by a responsible ministry. There is a parliament, consisting of a legislative council of 48 members and a legislative assembly of 95 members.

History, 1900.—The November elections for the legislative assembly resulted in the return of 42 Ministerialists, 51 Opposition, and 2 doubtful members. The ministry of McLean was overthrown through the efforts of Sir George Turner, who was entrusted to form a new cabinet. The Women's Suffrage bill, which was rejected by the legislative council in September, fared better in the legislative assembly in December, where it was passed, together with the Old-age Pension bill. A penny-postage law, to come into effect in April, 1901, was enacted at the close of the year. See AUSTRALIAN FEDERATION.

VILLARD, HENRY, a railroad financier and chief owner of the New York *Evening Post*, died November 13, 1900. He was born Heinrich Hilgard in Speyer, Bavaria, in 1835, and in 1853 came to the United States to join a colony of his

relatives, settled at Belleville, Ill. Later he became a journalist and devoted much attention to the political situation, particularly the Lincoln-Douglas debates, and during the presidential campaign of 1860 he was a correspondent for the New York *Herald*. Later as war correspondent he was at Bull Run and Fredericksburg, and in 1865 he was made managing editor of the Chicago *Tribune*, becoming greatly interested in the development of the Northwest.

In a trip to Europe in 1871 he became connected with Frankfort and Berlin bankers, and two years later, at the time of the American railroad bankruptcy and default in the payment of interest on bonds held in Germany, he co-operated with the committee formed for the protection of the bondholders. His visit to the United States in the capacity of intermediary resulted in the bondholders taking over the property of the Oregon & California Railroad Company and the Oregon Steamship Company in 1875 and in making Mr. Villard president. By the masterly stroke of a so-called "blind pool" of some \$20,000,000 he formed the Oregon & Transcontinental Railroad, which acquired control of the Oregon Railway and Navigation Company and the Northern Pacific. Mr. Villard was then made president of the Northern Pacific, and brought about the completion of the road in 1883. But no sooner was the road completed than it transpired that in his enthusiasm for the large enterprise he had greatly underestimated the cost of the work, and as a result, according to financial authorities, "the concern found itself burdened with a heavy floating debt, with extensive pressing requirements, and nowhere to turn for ready cash." The collapse of the company the following year was the cause of heavy loss to himself and bitter reproaches of those whom he made losers with him. New financial arrangements in Germany enabled him to repair his fortunes, and from 1889-93 he was chairman of the board of directors of the Northern Pacific. In the panic of that year the railroad suffered greatly. Mr. Villard at that time retired from the railroad business. He assisted Edison financially with the experiments resulting in the incandescent lamp now in use. In 1890, having bought from him his electrical manufacturing interests, Mr. Villard organized the largest electrical manufacturing establishment in the world, the Edison General Electric Company, of which he was the president for two years. He was also interested in Western mining properties. Both in Germany and America Mr. Villard was a most generous benefactor of educational and philanthropic institutions.

VILLEBOIS-MAREUIL, Colonel DE, a French military officer in the Boer service, was killed in action near Boshof, Orange Free State, April 5, 1900. Born in 1847, he was educated at St. Cyr, and, entering the army in 1867, served in Cochinchina. He was a captain in the army of the Loire in 1870, and took part in the recapture of Blois, where he was wounded. He was decorated for his meritorious conduct at this time. He entered the war school in 1871, and when General Boulanger became minister of war in 1882 he joined the general staff. As lieutenant-colonel he went to Algeria in 1888, and after his promotion to the rank of colonel in 1892 he held commands at Mayenne, Soissons, and again in Algeria. He resigned from the work in 1895. After the outbreak of the Anglo-Boer War in the fall of 1899 he went to South Africa and joined the Transvaal forces, in which he was given a command.

VIRGINIA, a Southern Atlantic State of the United States, has an area of 42,450 square miles. The capital is Richmond. Virginia was one of the original thirteen States.

Mineralogy.—The State reached her maximum production of coal in 1899, with a total output for the calendar year of 2,105,791 short tons, valued at \$1,304,241. This was an increase of nearly 300,000 tons over the tonnage of 1898. Tazewell and Wise counties produced about 98 per cent. of the product, and the developments in Wise County were particularly noticeable. In 1899 Virginia and West Virginia together produced 986,476 long tons of iron ore, valued at \$1,766,410, practically all of which was mined in Virginia. Of the total product, 968,143 tons was brown hematite, and Virginia led all the States in the production of this variety of ore. Of the remainder, 17,173 tons was red hematite and 1160 tons was magnetite. The estimated yield of gold in 1900 was 171 fine ounces, and of silver, 285 fine ounces. The value of the quarry output for 1899 was: Limestone, \$255,640; granite, \$223,380; slate, \$183,110, and sandstone, \$8000; in all, \$670,130. All of the quarry products show a gain in annual output; the yield of slate, however, would have been much greater but for the loss of time from landslides in several of the larger quarries.

Agriculture.—The following shows the production and value of the principal crops for 1900: Corn, 28,183,760 bushels, \$13,810,042; wheat, 9,421,932 bushels, \$6,783,791; oats, 5,167,568 bushels, \$1,912,000; rye, 370,125 bushels, \$214,672; buckwheat, 58,812 bushels, \$32,347; potatoes, 2,223,778 bushels, \$1,312,029; hay, 589,133 tons, \$7,835,469. The *Bulletin* of the National Association of Wool Manufacturers estimated the wool clip for 1900 as follows: Number of sheep, 358,072; wool, washed and unwashed, 1,790,360 pounds; wool, scoured, 1,038,409 pounds.

Industries.—In 1899 there were 194 manufacturers of cigars and 105 of tobacco, with a combined output during the calendar year of 257,000,780 cigars, 693,309,950 cigarettes, 23,366,261 pounds of plug tobacco, 131,941 pounds of fine-cut, 5,347,386 pounds of smoking, and 872,585 pounds of snuff; total tobacco manufactured, 29,718,173 pounds. The grain and fruit distilleries in operation during the fiscal year ending June 30, 1900, numbered 800, a gain of 170 in a year. For the fiscal year the amount of fruit brandy produced was 78,061 gallons; spirits rectified, 1,119,681 gallons; distilled spirits gauged, 2,499,821 gallons, and fermented liquors produced, 139,917 barrels. The most notable gain over the output of the previous year was in the production of fruit brandy, which shows an increase of nearly 100 per cent. Two new cotton mills, containing 10,000 spindles, were established in 1900. The production of pig iron in 1900 was 490,617 long tons, as against 365,490 long tons in 1899. During 1900 there were 203 commercial and business failures—1.11 per cent. of the 18,294 business concerns in the State—and the aggregate liabilities were \$1,175,592.

Commerce.—During the fiscal year ending June 30, 1900, the imports of merchandise at the ports of Alexandria, Newport News, Norfolk and Portsmouth, and Richmond aggregated in value \$3,205,784, an increase in a year of \$1,869,395; and the exports, \$47,870,419, an increase of \$5,861,369. The total foreign trade of the year was \$51,076,203, an increase of \$7,730,764 over 1898-99.

Railways.—The new railway construction reported for the calendar year 1900 amounted to 63.23 miles, giving the State a total mileage of 3793.36.

Banks.—Of the 65 national banks on October 31, 1900, 45 were in operation, 14 in liquidation, and 6 insolvent. The capital stock aggregated \$5,216,000; circulation outstanding, \$3,895,540; deposits, \$23,402,604, and reserve held, \$5,698,584. The State banks June 30, 1900, numbered 95, and had capital, \$5,966,870; deposits, \$22,451,581, and resources, \$33,313,535. During the year ending September 30, 1900, the exchanges at the clearing houses at Norfolk and Richmond aggregated \$226,200,140, an increase over the preceding year of \$20,361,530.

Finances.—The assessed valuation of property for the year 1900 was: Real estate, \$316,563,279; personal property, \$107,279,401; total, \$423,842,680. The amount of State taxes was \$2,132,367; total State revenue for year ending September 30, 1900, \$3,739,267; balance from previous year, \$587,397; total revenue and balances, \$4,326,665. The disbursements for the year were \$3,535,343, leaving a balance October 1, 1900, of \$791,321.

National Guard.—The "Virginia Volunteers" are composed of 50 cavalry, 196 artillery, and 805 infantry. The total number of troops authorized is 5176. The State appropriations for military purposes aggregated \$11,200.

Education.—The estimated number of persons between the ages of 5 and 18 in 1899 was 586,900. The enrolment in the public schools for the school year 1898-99 was 358,825, and the average daily attendance, 203,136. There were 8836 teachers, 7218 buildings used as schoolhouses, and public school property valued at \$3,336,166. The total school revenue was \$2,010,624, and expenditures, \$1,971,264, of which \$1,504,397 was for teachers' and superintendents' salaries. The average expenditure per pupil for the whole school year was \$9.70. There were 67 public high schools, with 178 teachers and 3966 secondary students; 80 private secondary schools, with 291 teachers and 2310 secondary students; 3 public normal schools, with 22 teachers and 308 students in normal courses; and 7 private normal schools, with 29 teachers and 337 students in normal courses. Ten colleges and universities for men and for both sexes reported 118 professors and instructors, 1513 students in all departments, and a total income of \$285,577; 2 schools of technology reported 45 professors and instructors, 561 collegiate and graduate students, and a total income of \$124,792; and 12 colleges and seminaries for women reported 162 professors and instructors, 1341 students in all departments, and a total income of \$138,850. The professional schools comprised 4 theological schools, with 19 instructors and 196 students; 3 law schools, with 14 instructors and 235 students; and 3 medical schools, with 73 instructors and 624 students.

Population.—According to the United States census, the population in 1890 was 1,655,980; in 1900, 1,854,184; increase for the decade, 198,204, or 12 per cent. The four largest cities, with population in 1900, are: Richmond, 85,050; Norfolk, 46,624; Petersburg, 21,810, and Roanoke, 21,495.

Negro Legislation.—Two acts in regard to negro transportation in the State were approved on January 30 and on February 9 respectively, to go into effect on July 1, 1900. By the first act all railroads were required, under penalty of from \$300 to \$1000 for each offence, to furnish on all regular local trains separate coaches or separate compartments in coaches, of equal quality and convenience, for colored and white passengers. The second act provided that all passenger steamboats should, so far as the construction of the boat permitted, have for white and colored passengers separate eating, sitting, and sleeping quarters of equal quality and convenience. It

was made the duty of officers to see to it that passengers kept to the places assigned to them, or to put them off the boat at any landing; and for such action the officers or the company were not to be held liable. An act was approved on February 5 empowering the Negro Reformatory Association of Virginia to bind out as servants or in other employments negroes under 17 years of age committed to its charge. The association was also given the same authority over persons committed to its charge as was possessed by regular penitentiary authorities.

Other Legislation.—An act was approved on March 3 directing that every taxable corporation having business in the State should furnish annually to the auditor of public accounts a complete list of the stockholders of the company and of the amount held by each stockholder. These lists as transferred to the commissioners of revenue were to be used as the basis of taxation. The object of the law was the better enforcement of the provision requiring taxation upon the shares of stock in joint-stock companies. By an act approved March 2 telegraph companies were made liable for special damages in case of the failure of their employees to properly transmit or deliver messages. "Grief and mental anguish" occasioned to the plaintiff were to be taken into account in fixing the amount of damages; and these damages were to be recovered, notwithstanding regulations of the company concerning the repeating of messages and notwithstanding any special contract whereby the company was relieved from the consequence of its own negligence. An act approved March 6 provided that any railroad incorporated under the laws of the State should have the right to connect with any other such railroad, provided the former road was willing to pay the necessary cost of construction. If the latter railroad objected to the connection, the Circuit Court of the county was directed, if it considered the connection reasonable, to issue a decree ordering the same. An act was approved directing the Louisville & Nashville Railroad to reduce its railroad fares from 4 to not exceeding 3 cents for passengers per mile, which is the fare of "other railroad companies in Virginia." Other legislation included an act authorizing the council of each city and town to levy a tax of 1 mill on every \$100 of taxable property for the maintenance of public libraries; an act authorizing the appointment of a State Board of Health; an act providing for a commission to examine and report on marriage, divorce, insolvency, inheritance, and other subjects for which legislation in the several States was desirable; and an act directing the commission appointed for that purpose in 1894 to endeavor to obtain settlement with West Virginia as to the proportion of the public debt incurred before the separation of West Virginia which in equity should be borne by that State. A resolution approved February 21 called upon the State Board of Health to report to the next Legislature whether there was not a more humane but equally sure method of taking life than that of hanging.

Boundary-line Between Virginia and Tennessee.—See TENNESSEE.

Proposed Constitutional Amendments.—Two constitutional amendments were directed by the Legislature to be submitted to the voters for ratification at the elections held in November, 1901. The first proposed amendment provided that county and district elections should be held in November of each year, instead of, as formerly, in May. The second repealed the constitutional provision restricting taxation on the oyster industry.

Elections.—At the State election in 1897 the Democratic nominee, Tyler, had 109,655 votes, and the Republican nominee, McCaull, had 56,840 votes, making Tyler's plurality 52,815.

The ten representatives in Congress were returned to the 57th Congress, with three exceptions: William A. Young (Dem.), of the second district, was succeeded by H. L. Maynard (Dem.); S. P. Epes (Dem.), of the fourth district, was succeeded by F. R. Lassiter (Dem.), and J. M. Quarles (Dem.) in the tenth district was succeeded by Henry D. Flood (Dem.). The State Legislature in 1900 consisted in the Senate of 38 Democrats and 2 Independents, and in the House of 93 Democrats and 7 Independents. In 1901 the Legislature will consist, in the Senate, of 39 Democrats and 1 Independent, and in the House of 97 Democrats and 3 Independents.

At the national election McKinley received 115,687 votes, and Bryan received 146,080 votes. In 1896 McKinley received 135,388 votes, and Bryan, 154,709. Thus, Bryan's plurality increased from 19,341 in 1896 to 30,215 in 1900.

State Officers and National Representatives.—State officers for 1900: Executive—governor, J. H. Tyler; lieutenant-governor, Edward Echols; secretary of state, Joseph T. Lawless; first auditor, Morton Marye; second auditor, Josiah Ryland, Jr.; treasurer, A. W. Harman, Jr.; superintendent of free schools, J. W. Southall; attorney-general, A. J. Montague—all Democrats.

Supreme Court of Appeals: President, James Keith; justices, J. W. Riely, J. A. Buchanan, George M. Harrison, and Richard H. Cardwell; clerk, G. K. Taylor—all Democrats.

State officers for 1901: Executive—same as for 1900.

Supreme Court: Same as for 1900, except that Archer A. Fhlegar replaces J. W. Riely as justice.

Congressional representatives for 1900 (56th Congress): William A. Jones (Warsaw), William A. Young (Norfolk), John Lamb (Richmond), Sydney P. Epes (Blackstone), Claude A. Swanson (Chatham), Peter J. Otey (Lynchburg), James Hay (Madison), John F. Rixey (Brandy), William F. Rhea (Bristol), Julian M. Quarles (Staunton)—all Democrats.

Congressional representatives for 1901 (57th Congress): Same as for 1900, except that Henry L. Maynard (Portsmouth), F. R. Lassiter (Petersburg), and Henry D. Flood (Appomattox), Democrats, replace William A. Young, S. P. Epes, and Julian M. Quarles.

Senators for 1900 (56th Congress): Thomas S. Martin (until 1901), from Elkins, and John W. Daniel (until 1905), from Lynchburg—both Democrats.

Senators for 1901 (57th Congress): John W. Daniel (until 1905), from Lynchburg, and Thomas S. Martin (until 1907), from Scottsville.

VIRGINIA, UNIVERSITY OF, Charlottesville, Va., chartered 1819, opened its first session in 1825. In establishing it, Thomas Jefferson, for the first time in America, threw open the doors of an institution founded on the line of a true university. There is no curriculum or prescribed course of study to be pursued by every student, a policy now being adopted in some measure by nearly all the large universities of the country. The titled degrees, conferred only upon examination after residence, are the Ph.D., M.A., B.A., B.S., M.D., B.L., B.S., C.E., M.E., Mech.E., and E.E. No honorary degrees are granted. There are five departments: Academic, engineering, law, medicine, and agriculture. The preparation necessary for entrance for the Arts course is equivalent to at least eight years of pre-collegiate training, and the degree is conferred after the completion of ten of the required courses. The medical course covers four years, the law course two. The library contains about 50,000 volumes, having been nearly restored to its proportions before the disastrous fire of 1895. A new hospital was approaching completion at the end of the college year 1899-1900. The annual State appropriation of \$40,000 was received, academic students from Virginia as usual paying no fees. The total income for the year (unofficial) was \$146,338. The productive funds amount to \$369,600. The number of students at the opening of the college year 1900-01 was 670, the largest attendance yet recorded. The attendance for 1899-1900 was 646. In addition, summer courses are held in a number of subjects.

VITAL STATISTICS. The threatening depopulation of France may be remedied as a result of a recent bill introduced into the French Senate taxing celibates of both sexes after they reach the age of 30 years, and taxing childless couples after they have been married five years or until a child is born to them. The Swiss Federal Statistical Department published its report for 1899 in April, 1900. With a population of 3,144,741, its death list reached 58,052, or 18 per 1000. The infant mortality represented 22.5 per cent. of the total, while 20 per cent. were people over 70 years of age. There were but 4 per cent. of the deaths due to infectious diseases, 4.4 per cent. were due to organic heart disease, and 3.9 per cent. were due to cerebral hemorrhage. But 3 in 1000 deaths were due to suicide. Tubercular diseases claimed 15.6 per cent. of the deaths, all diseases of the respiratory organs causing 17.8 per cent. Forty-one fatal cases of influenza were reported. The surplus of births over deaths amounted to 36,619. The Department of Health of New York City published the vital statistics for the city for 1899 in December, 1900. The health of the city was shown to have been excellent; 65,343 deaths occurred during the year, making the death-rate 18.41 per 1000. In 1899 London's death-rate was 19.80, Paris's death-rate was 20.20, Berlin's death-rate was 18.70, and Vienna's death-rate was 20.60 per 1000.

In Honolulu during June and July an alarming increase in the death-rate was reported, principally among the native Hawaiians and the Japanese of Oahu. In these two months the death-rates were respectively 45 and 49 per 1000. Tuberculosis heads the list of causes of death, typhoid fever carrying off many victims during a slight epidemic. Following are given the figures regarding yellow fever, plague, and smallpox in foreign countries, the three principal epidemics of the world, compiled from the *Public Health Reports* of the United States Marine Hospital Service, and representing the records kept by the surgeons in that service of the cases brought to their notice. These lists are imperfect and lay no claim to being complete. The record of yellow fever is as follows from December 29, 1899, to December 28, 1900: Argentina, 1 death; Brazil, 1501 deaths; Colombia, 168 cases, 88 deaths; Costa Rica, 6 cases, 2 deaths; Cuba, 1430 cases, 346 deaths; Mexico, 917 cases, 540 deaths; Salvador, 43 cases, 5 deaths; West Indies, 1 case; France, 2 cases; Santo Domingo, 5 cases, 3 deaths; West Africa, over 15 cases, over 8 deaths. The record of the plague

from December 29, 1899, to December 28, 1900, unless otherwise stated: Arabia, 1053 cases, 970 deaths; Argentina, 51 cases, 31 deaths; Australia, 541 cases, 155 deaths; Brazil, 599 cases, 289 deaths; China, 2500 deaths; Egypt, from June 1 to December 29, 1900, 130 cases, 62 deaths, at Alexandria and Port Said; Formosa, 1132 cases, 829 deaths; England, June 1 to December 28, 1900, 4 cases, 2 deaths; Hawaiian Islands, 84 cases, 64 deaths; Germany, 1 case, 1 death; India, 58,846 deaths; Japan, 232 deaths; Madagascar, 59 cases, 48 deaths; Mauritius, June 1 to December 28, 1900, 71 cases, 51 deaths; New Caledonia, December 29, 1899, to June 1, 1900, 123 cases, 77 deaths; Paraguay, 22 deaths; Persia, "plague reported;" Philippines, 399 cases, 281 deaths; Portugal, 299 cases, 115 deaths; South Africa, 12 cases, 3 deaths; Spain, 1 case; Scotland, June 1 to December 28, 1900, 29 cases, 9 deaths; Straits Settlements, 2 deaths; Turkey, 5 cases; Wales, 1 case, 1 death.

The record of smallpox from June 29, 1899, to June 28, 1900, unless otherwise stated: Arabia, 3 deaths; Australia, 264 cases, 92 deaths; Argentina, 29 deaths; Austria, 412 cases, 1 death; Belgium, 92 cases, 56 deaths; Brazil, 823 cases; British Columbia, 526 cases; China, over 19 cases, 4 deaths; Colombia, 7 deaths; Cos, 235 deaths; Costa Rica, 1 case; Ecuador, 73 deaths; Egypt, 100 deaths; England, 500 cases, 24 deaths; Formosa, 425 cases, 130 deaths; France, 340 cases, 389 deaths; Germany, 24 cases, 9 deaths; Gibraltar, 58 cases, 11 deaths; Greece, 127 cases, 51 deaths; Hungary, 1 case; India, 3597 deaths; Italy, over 24 cases, 5 deaths; Japan, 11 cases; Korea, "reported endemic;" Manitoba, 12 cases, 2 deaths; Malta, 24 cases, 3 deaths; Mexico, 933 cases, 585 deaths; Netherlands, 1 case; New Brunswick, over 272 cases before June 1, 1900; Ontario, 284 cases, 1 death; Philippines, 70 cases, 21 deaths; Porto Rico, 2 cases before June 1, 1900; Quebec, 869 cases, 16 deaths; Russia, 1991 cases, 902 deaths; Scotland, 118 cases, 14 deaths; Spain, over 577 deaths; Straits Settlements, 44 deaths to June 1, 1900; Switzerland, over 26 cases, 14 deaths; Uruguay, 2 cases; Venezuela, 1 death; Yukon Territory, 11 cases.

The *Medical Record* quotes an English magazine as reporting that in Germany 413 males out of 1000 and over 500 females out of 1000 reach the age of 50; that in the United States there are 2583 female to 1398 male centenarians; that in France, out of every 10 centenarians 7 are women and 3 are men, and that in the rest of Europe of 21 centenarians 16 are women and 5 are men. See SMALLPOX; TUBERCULOSIS; PLAGUE; TYPHOID FEVER and YELLOW FEVER.

VIVISECTION. The discussion of vivisection has been carried on during the year with the customary vigor and acrimony. In London the Hon. Stephen Coleridge, in a communication to the *Contemporary Review*, charged that money given for the support of certain hospitals was being diverted from its original purposes, and was being used for the construction of research laboratories and buildings for medical schools where vivisection was practised. He made the charge in particular against the managers of the Middlesex Hospital, who had received a license to perform experiments on living animals. This communication drew a reply from Sir Ralph Thomson, the chairman of the weekly board of this hospital, in which it was stated that the money expended in the erection of the Cancer Research Laboratory, specifically referred to in the charge, had been given for the investigation of the disease as well as the cure of patients so afflicted. Mr. Coleridge, however, was not to be rebuffed, and later in the year addressed an open letter to the secretary of state for the Home Office in which he asked that some real protection from torture be extended to the helpless animals dissected alive in English laboratories, and that the new society support a bill to make such torture illegal and punishable. The Cruelty to Animals act of 1876, under the terms of which vivisection is legalized in England, requires that licenses shall be issued to each experimenter and laboratory. According to a parliamentary return made in July, 1900, the number of licenses issued in 1899 was 250, of which number there were 72 instances where no experiments were performed by the holders. The total number of experiments performed amounted to 8469, as compared with 9151 in 1898. According to the report, the licensees were found to be acting in accord with the spirit as well as the letter of the law. There are 58 licensed laboratories, and the law is enforced by one inspector and one assistant.

In the United States an active propaganda has been carried on in opposition to vivisection by the various humane and anti-vivisection societies. Bills have been brought before the Legislatures of various States with the object of restricting or doing away with vivisection, and have aroused violent and often intemperate discussion. On February 21, 1900, there was a hearing in Washington before a Senate committee on a bill For the Further Prevention of Cruelty to Animals in the District of Columbia. This bill was advocated by R. Ross Perry, of Washington, D. C., Dr. Matthew Wood, of Philadelphia; Dr. David H. Cochran, ex-president of the Polytechnic Institute of Brooklyn, New York; Mr. Crammond Kenedy, of Washington, D. C., and Dr. A. Leffingwell; and was opposed by Dr. William W. Keen, president of the American Medical Association and professor of surgery in Jefferson

Medical College, Philadelphia; Bishop Lawrence, of Massachusetts; Professor Hare, of Jefferson Medical College, Philadelphia; Dr. Henry P. Bowditch, of Harvard University; Dr. Mary Putnam Jacobi, of New York City; Dr. Howard A. Kelly, of Johns Hopkins University; Dr. William Osler, of Johns Hopkins University; Dr. D. E. Salmon, chief of Bureau of Animal Industry, United States Department of Agriculture; Dr. William H. Welch, of Johns Hopkins University, and Surgeon-General Sternberg, of the army. The argument as brought out in this and other discussions depends mainly on the point of view. The practical benefits to humanity are urged by the scientists and the medical profession, while the moral side and the matter of abuse are the features of the attack of the anti-vivisectionists. The proceedings at the hearing have been published as a public document, and bring out very clearly the two sides of the question.

A few weeks after the hearing in Washington the question was again discussed before a committee of the Massachusetts Legislature, and many of the same arguments were presented. A large number of philanthropists, prohibitionists, and other reformers were included among those in favor of the bill to restrict vivisection, while President Eliot and the Harvard Medical Faculty were the chief opponents. President Eliot, of Harvard University, who has been active in striving to prevent legislation that would hinder or affect the progress of medical discovery, prepared a letter in reference to the bill restricting the practice of vivisection in the District of Columbia, in which he states the case for the scientific workers with great force. President Eliot in this protest speaks of any interference with the progress of medical discovery as inhuman, and states that the advances made in medical science during the last fifteen years have been accomplished almost exclusively through the use of the lower animals. He believes that treatment for the successful cure of such diseases as tuberculosis, erysipelas, cerebro-spinal meningitis and cancer will result from such experiments, just as occurred in the case of diphtheria. President Eliot believes, however, that vivisection should not be allowed in secondary schools or before college classes for purposes of demonstration only, but he considers any attempt to interfere with necessary processes of medical investigation not only inexpedient but fundamentally inhuman.

VOGL, HEINRICH, German operatic tenor, died in Munich, April 21, 1900. Born at Au, a suburb of Munich, January 15, 1845, he studied in 1860 at the Freising Teachers' Seminary, and in 1862 became an assistant in a school at Ebersberg and in 1865 at Lorenzenberg. He made his operatic *début* as Max in *Freischütz*, in which rôle he scored a decided success. Subsequently he became equally famous as oratorio and *Lieder* singer, and extended his *répertoire* to include more than one hundred rôles, and was especially excellent in the Wagner operas. His last appearance on the stage after an illness of about two months was in the part of Canio in *Pagliacci*, and the last words of the part, "*la commedia è finita*," were his last words on the stage. Besides singing, Vogl made himself a reputation as a composer of songs, and his opera *Der Fremdling* was performed at Munich on May 7, 1899, with more than a *succès d'estime*. Vogl married Therese Thoma, who also became famous in Wagnerian rôles.

VOLUNTEERS OF AMERICA, a religious and philanthropic interdenominational organization under the leadership of Ballington Booth. Incorporated November 6, 1896. During the year a home of rescue was opened in Newark, a coffee restaurant in Boston, a poor men's hotel in Philadelphia, a home of mercy for young women in Boston, a large hotel for homeless men in Chicago, and a Hope Hall for discharged prisoners in Flushing, L. I. The Volunteers are in touch with 21,000 prisoners by correspondence, and have 7200 members in their Prison Reform League, apart from those who have been grafted to suitable and trustworthy situations. Headquarters, 1 Fourth Avenue, New York City.

WACHUSETTS DAM. See DAMS.

WAGES. Statistics on this subject are usually from one to two years behind the time. With the exception of the figures for 1900 for the United States as a whole, and for the States of New York and Michigan, we shall, therefore, have to give an account of the fluctuations of wages in 1898 and 1899 as made known through the official reports published in 1900.

United States.—In connection with an investigation of the effect of trusts on prices and wages (see TRUSTS), the United States Department of Labor undertook to collect data on prices and wages for the period of ten years from 1891 to 1900. So far as the effect of trusts on wages is concerned the reader is referred to the article on TRUSTS. In addition to that, however, the department collected a large number of wage statistics, covering 26 industries and 192 occupations. One hundred and forty-eight establishments scattered all over the country were willing to show their pay-rolls to the agents of the department, and thus the figures were obtained at first hand. The wages are for manufacturing industries only. To make compari-

son easy, the following table presents a series of relative wages, expressed in percentage of the wages for 1891, which is taken as a basis. Calling the average wages paid in 1891, 100, the wages for the following years appear as follows:

1891.....	100.00	1896.....	97.93
1892.....	100.30	1897.....	98.96
1893.....	99.32	1898.....	98.79
1894.....	98.05	1899.....	101.54
1895.....	97.88	1900.....	103.43

The figures thus seem to bear out the facts of common knowledge—namely, the fall in wages in the years of general depression and the advance during the last two years.

Kansas.—The annual reports of the Bureau of Labor and Industrial Statistics for 1898 and 1899 give statistics of wages by occupations. The lowest wages in 1898, \$278.50 per annum, were earned by railroad trackmen; the highest, \$1200, by engineers. Butchers, cigar makers, mechanics' helpers, and miners earned from \$350 to \$500. Barbers, carpenters, and section foremen earned from \$500 to \$600. Brakemen, machinists, and mechanics, from \$600 to \$700. In 1899 wages of men ranged from \$386.75 (average) in the building trades to \$865.58 (average) for railway trainmen.

Maine.—The *Thirteenth Annual Report* of the Bureau of Industrial and Labor Statistics gives the following wage statistics:

	COTTON MILLS.		WOOLEN MILLS.		BOOT AND SHOE WORKERS.
	1898.	1899.	1898.	1899.	1899.
Men.....	7.45	7.40	8.49	8.78	10.88
Women.....	5.55	5.68	6.10	6.19	7.97
Children.....	2.74	2.87	3.77	3.63	4.00

Paper and pulp-mill employees averaged \$1.62 per day in 1899. It appears from the above that wages have practically been stationary.

Massachusetts.—The annual report of the Bureau of Statistics of Labor on the "statistics of manufactures" for 1898 shows that in 80 industries in the State 8.52 per cent. of all the male workers in 1897 received less than \$5 per week, while in 1898 this group constituted 9.12 per cent. of all the male workers; those receiving from \$5 to \$10 per week constituted 45.02 per cent. in 1897 and 45.67 per cent. in 1898; those from \$10 to \$15 made up 30.80 per cent. in 1897 and 29.79 in 1898; from \$15 to \$20, 11.88 per cent. in 1897 and 11.73 in 1898; and, finally, those receiving \$20 or more per week decreased from 3.78 per cent. in 1897 to 3.69 in 1898. This is rather an unfavorable showing for the workmen, as it indicates an increase in the two lower-paid groups. The statistics for the female workers reveal a similar tendency, and are as follows: Under \$5, 26.45 per cent. in 1897 and 28.57 in 1898; \$5 to \$10, 66.47 in 1897 and 64.32 in 1898; \$10 to \$15, 6.35 per cent. in 1897 and 6.47 in 1898; \$15 to \$20, .63 of 1 per cent. in 1897 and .56 of 1 per cent. in 1898; \$20 or more, .10 of 1 per cent. in 1897 and .08 in 1898. In the twenty-ninth annual report on the statistics of labor, published by the same bureau, a remarkable piece of work is brought down to its conclusion. In 1895 the bureau undertook a chronological presentation of "graded weekly wages," covering the period from 1810 to 1891. This presentation was continued from year to year in alphabetical order of the names of occupations, giving wages paid at different periods in each occupation and branch of occupation in various States of the Union and foreign countries, according to sex. Each individual quotation is given as just stated, there being 489,600 wage quotations in all. An additional column contains the grading of the wages in five grades as follows: High, medium high, medium, medium low, low. Some of these quotations represent average wages paid to a single person; most of them, however, are averages for whole groups of occupations, so that the number of employees included is not less than half a million, though "the quotations may represent 5, 10, 15, or even 20 millions of employees." The information for the United States has been obtained through special agents and from the reports of the State bureaus of labor; that for foreign countries has been "drawn from consular reports made by American and British consuls to their respective home governments." The data for each occupation are then summarized under "Massachusetts," "Other United States," and "Foreign Countries" in such a way as to show what was the highest, medium high, medium, medium low, and lowest wage in each case.

and the year to which it refers and the excess (or deficiency) of Massachusetts wages over those paid in other States and in foreign countries. This is followed by a series of five tables, "showing in which States of the Union and in which foreign countries the highest wages, classed as high, the highest medium high, the highest medium, the highest medium low, and the highest low weekly wages—that is to say, the highest rates in each of the grades shown—were paid, every State or country being credited with the number of occupations in which the highest wage in each grade was paid." From these tables it appears that Massachusetts had the greatest number of occupations—namely, 31.3 per cent.—in which the highest high wages were paid. New York followed next, with 16.69 per cent. None of the foreign countries was represented. In the next grade, medium high, Massachusetts and New York lead again, with none of the foreign countries represented. The same is true of grade medium. In medium low Massachusetts leads again, followed by Pennsylvania and the foreign countries still lacking. Finally, it is only in the low grade that a few of the foreign countries—namely, Australia, France, Great Britain, and Scotland—are represented by a few occupations (constituting less than 3 per cent. of the total), in which the highest rates in that grade are paid, and Massachusetts and New York are again in the lead. The following table, taken from the last report, gives the percentage in the United States and foreign countries, respectively, of the total number of occupations in which the highest rates in each grade were paid, the United States and foreign countries being each considered as a unit.

GRADES.	UNITED STATES.				FOREIGN COUNTRIES.	
	1895.	1896.	1897.	1898.	1895.	1896.
High.....	95.15	100.00	100.00	100.00	.....	.....
Medium high.....	73.82	98.99	85.88	81.98	.....	.....
Medium.....	98.19	98.99	98.99	100.00	1.94	1.01
Medium low.....	73.78	98.99	91.22	91.28	0.97	1.01
Low.....	92.24	97.64	100.00	97.68	2.91	2.86

Michigan.—The sixteenth annual report of the Bureau of Labor and Industrial Statistics for 1899 gives wage statistics for 36 distinct occupations. The wages range from \$1.20 per day for unskilled laborers to \$2.43 for stone and brick masons; the average length of employment ranged from 7.3 months for stone and brick masons to 12 for barbers, brewers, laundry employees, millers, and street-car employees. For female employees wages ranged from 47 cents per day for bean sorters to \$1.26 for stenographers, the length of employment varying from 7½ months for hat makers to 12 for bakery employees and dress-stay makers.

The report for 1900 contains wage statistics for 13 occupations of men and 19 of women. The wages for men ranged from \$1.27 for day laborers to \$2.55 for moulders, and for women from 49 cents for domestics to \$1.39 for milliners; the average length of employment among men varied from 9.3 months for railroad employees to 12 for electricians and telegraph operators, and among women from 9 for bean sorters and telegraph operators to 11.5 for bookkeepers, photographers, and office clerks. The classification, however, is not quite uniform in the two reports, and the results are, therefore, not conclusive.

New York.—The advance sheets of the reports of the commissioner of labor statistics for 1900 contain the usual presentation of earnings in various occupations by quarters, which is summarized in the following table:

DISTRIBUTION OF EACH 100 MALE MEMBERS OF LABOR ORGANIZATIONS ACCORDING TO AMOUNT EARNED.

GRADES.	IN FOURTH QUARTER.		IN FIRST QUARTER.		IN THIRD QUARTER.	
	1898.	1899.	1899.	1900.	1899.	1900.
Less than \$75.....	6.9	3.2	5.7	6.1	2.5	4.5
\$75-\$149.....	32.6	26.8	28.7	29.1	23.1	34.0
\$150-\$225.....	35.7	45.8	45.4	41.9	41.9	47.1
\$225 +	24.8	24.7	20.2	22.9	33.5	14.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

The advantage of this method of presenting the general trend of wages lies in the fact that it enables us to throw all occupations together without getting meaningless averages. In addition to that the report contains detailed statistics of wages for each separate trade. According to the above table, conditions were not so favorable in the fall of 1900 as during the same season in the preceding year, since there is a great falling off in the number of those receiving the highest wages with a corresponding increase in the lower-paid groups. A similar method has been used to indicate the length of the working day for various employees. From the following table it appears that considerably longer hours are being worked in smaller towns than in New York City.

PROPORTION OF EMPLOYEES WORKING THE SPECIFIED HOURS PER DAY, 1896 TO 1899.

	NEW YORK CITY.				REMAINDER OF THE STATE.			
	1896.	1897.	1898.	1899.	1896.	1897.	1898.	1899.
8 hours or less.....	12.6	13.7	12.3	13.1	6.8	6.5	4.9	4.1
9 hours.....	31.8	31.9	34.0	36.3	11.3	12.0	12.6	10.3
10 hours.....	53.1	51.3	50.6	48.0	77.2	77.0	78.0	81.0
Over 10 hours.....	2.5	3.1	3.1	2.6	4.7	4.5	4.5	4.6
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

North Carolina.—The twelfth annual report of the Bureau of Labor Statistics contains the following statistical information in regard to wages: In the tobacco industry the average daily wages in 1898 were: For skilled labor, men, \$1.27; women, \$0.64; unskilled labor, men, \$0.64; women, \$0.37; children, \$0.26. In woollen mills: Skilled labor, men, \$1.01; women, \$0.56; unskilled labor, men, \$0.62; women, \$0.28½. In cotton mills: Skilled labor, men, \$1.07; women, \$0.63; unskilled, men, \$0.68; women, \$0.45; children, \$0.32. In lumber mills in the eastern part of the State: Engineers, \$1.39; firemen, \$0.95; sawyers, \$1.91; laborers, \$0.79; in the middle and western part wages are nearly 30 per cent. lower for all grades. In distilleries: Skilled men, \$1; unskilled, \$0.50, etc.

Denmark.—In 1898 the government undertook an investigation of wages of agricultural laborers; the results are now published by the Statistical Bureau, together with a comparison with the figures for 1892 and 1872, when similar investigations had been carried out. The average annual earnings, in addition to board, of farmhouse servants engaged by the year are given as follows:

	Men.	Women.
1872.....	\$35.00	\$19.16
1892.....	55.27	35.00
1897.....	62.77	38.89

In addition to board, married men are often furnished with free houses and similar privileges. The wages paid to men in the summer are about twice as high as in the winter. In the case of women, the wages in summer are about one and a half times as large as in winter. Laborers engaged by the day earned in 1897. 47 cents per day in the spring and summer, 62 cents at harvest time, and 38 cents in winter, boarding themselves; if boarded by the employer, their earnings were 32, 46, and 21 cents respectively, according to season. Field laborers permanently employed made the following progress:

Year.	Earnings without Board.	Earnings with Board.
1872.....	\$113.06	\$60.00
1892.....	135.00	87.50
1897.....	148.33	95.83

Great Britain.—The sixth and seventh annual reports on "changes in wages and hours of labor" in the United Kingdom and the preliminary figures published in the *Labor Gazette* make it possible to summarize the results for 1898 and 1899. In the former year, of 1,015,169 persons affected by wage changes, 1,003,290, or nearly 99 per cent., had their wages increased, and but 11,865—slightly more than 1 per cent.—had their wages decreased. The number of those whose wages changed in 1899 was greater than in 1898—namely, 1,175,576, exclusive of agricultural laborers, seamen, and railway employees. The net increase in wages in 1899 was \$575,000, as against \$465,000 in 1898 and \$225,000 in 1897. Only 3 per cent. of all the workers whose wages increased in 1899 went on strike, the other gains having been achieved by peaceable means. The rise of wages in 1899 was, however, greatly exceeded by that in 1900, which affected 1,088,300 people, with a total unprecedented net increase of \$1,015,000, or 92 cents per person affected. The per capita increases for the years

1896 to 1899 were 21.3, 25.9, 38.5, and 49 cents respectively. The advance was especially great during the first eight months of the year, but was checked in the latter part with the first beginnings of the reaction, which is still noticeable. Both in 1898 and 1899, as well as in 1900, the miners could boast of the greatest advance in wages, the iron and steel men following next. The increase in miners' wages in 1900 made up 80 per cent. of the total gain in wages in the United Kingdom. The increase in wages was accompanied by a simultaneous reduction in the hours of labor, as may be seen from the following table, taken from the *Labor Gazette*:

YEAR.	Number of work-people affected by change in hours of labor.	Net average reduction per week in hours of those affected by changes.	Computed total reduction in weekly hours of those affected.
		Hours.	Hours.
1893.....	34,649	1.96	68,937
1894.....	77,158	4.04	311,545
1895.....	22,785	1.94	44,105
1896.....	108,871	0.73	78,533
1897.....	70,633	4.08	284,075
1898.....	39,049	2.10	81,917
1899.....	85,949	3.54	127,142
1900.....	55,560	4.10	227,700

As regards agricultural laborers, the districts in which an increase of wages was reported in 1898 contained 214,297 laborers, and those reporting a decrease had 2740 laborers; the net change per laborer per week was an increase of 16 cents. The wages of seamen employed on steamships engaged in foreign trade increased from \$18.92 in 1897 to \$19.96 in 1898; on the other hand, they declined from \$13.99 to \$13.77 on sailing vessels. Eight railroad companies out of 29, employing 122,268 persons, reported a reduction of wages; on the whole, however, wages increased in the railroad industry, the following being the average of the weekly wages: 1896, \$5.84; 1897, \$5.94; 1898, \$6.

An attempt has been made for the first time to investigate the wages paid in Great Britain to domestic servants, and the results of the investigation have been published in a *Report on the Money Wages of Indoor Domestic Service* by the Labor Department of the Board of Trade. The report deals with family servants; and although it is based only on 2067 returns, relating to some 5500 servants employed during the years 1894 to 1898, the cases are so widely and carefully selected as to grades of service and localities in the country as to furnish a reasonably typical presentation of existing conditions. As will be seen from the following table, wages are highest in London and lowest in Ireland, and vary with the age and occupation of the servant; the wages given here do not include board and perquisites.

The "selected" age figures in the first column of the foregoing table refer to the largest number of persons employed in each class. No average wage could be computed for each occupation, since wages differ with the age of the servant. As a general rule, wages increase with the age of the servant and the number of servants employed in a house, since in the latter case greater skill and higher qualifications generally are required.

AVERAGE YEARLY WAGES OF FEMALE DOMESTIC SERVANTS, AT SELECTED AGE PERIODS, BY OCCUPATIONS.

OCCUPATION.	Selected age period (years).	London.	England and Wales (excluding London).	Scotland.	Ireland.
Between maid.....	19.....	\$80.84	\$53.07		
Scullery maid.....	19.....	66.67	63.26		
Kitchenmaid.....	20.....	80.78	73.00	\$73.00	\$54.99
Nurse-housemaid.....	21 or under 25.....	72.51	77.86	68.13	
General servants.....	21 or under 25.....	73.51	71.05	74.46	50.12
Housemaid.....	21 or under 25.....	85.16	78.84	83.22	65.70
Nurse.....	25 or under 30.....	102.20	97.82	94.90	76.89
Parlor maid.....	25 or under 30.....	108.04	100.25	97.82	77.86
Laundry maid.....	25 or under 30.....	132.86	114.85	97.82	
Cook.....	25 or under 30.....	106.09	98.30	100.25	83.70
Lady's maid.....	30 or under 35.....	136.75	120.20	118.74	116.80
Cook-housekeeper.....	40 or upwards.....	202.45	173.25	107.06	
Housekeeper.....	40 or upwards.....	166.92	254.03	218.99	

WALDERSEE, ALFRED, Field Marshal, Count VON, commander-in-chief of the allied forces in China, was born at Potsdam, April 8, 1832. Entering the army in 1850, he rose in command, and served as major in the Austrian campaign of 1866. In the Franco-Prussian War he was aide-de-camp to the King of Prussia, and took part in the capitulation of Sedan and the siege of Paris. When peace was concluded he was promoted colonel, and in 1871 appointed *chargé d'affaires* at Paris. In 1882 he became quartermaster-general of the Prussian staff which was in command of Field Marshal Von Moltke. Walderssee acted as his deputy for a time, and succeeded him in the position of chief of the general staff of the Prussian army in 1888. In 1891 he took command of the Ninth Army Corps. In 1898 he was appointed inspector-general and subsequently field-marshal. Count Von Walderssee married in 1874 Mary Esther Lee, of New York, widow of Prince Frederick of Schleswig-Holstein. In August, 1900, Walderssee was given command of the German forces in China, and became commander-in-chief of the allied forces with the approval of the Powers.

WARD, MRS. HUMPHRY (MARY AUGUSTA ARNOLD), during the year 1900 has published a new novel, *Eleanor*. Mrs. Ward's grandfather was Thomas Arnold, D.D., of Rugby, and her father Thomas Arnold, of University College, Oxford. In 1881, accepting a position on the staff of the *Times*, she left Oxford for London, and became a frequent contributor to English magazines. *Robert Elsmere*, published in 1888, made her fame. The novels which followed, *David Grieve* (1892); *Marcella* (1894); *The Story of Bessie Costrell* (1895); *Sir George Tressady* (1896), and *Helbeck of Bannisdale* (1898), were also enthusiastically received by the public. In 1890 she took part in founding University Hall, a settlement for the improvement of the working classes of Saint Pancras, the work of which is now being continued on a large scale in a new building presented in 1897 by Mr. Passmore Edwards. Mrs. Ward's interest in social problems, which has been an active principle in her life, pervades her novel.

WARNER, CHARLES DUDLEY, an American author, died October 19, 1900. He was born at Plainfield, Mass., in 1829, and spent his boyhood at Clermont. The simple country life of these years, with their Calvinistic influences, is described in one of his most delightful books, *Being a Boy* (1879). After being a clerk in a drug store and in a post-office he graduated from Hamilton College in 1851. He went to Missouri with a surveying party, studied law at the University of Pennsylvania, and practised four years at Chicago. Shortly before the Civil War he became connected with the *Hartford Press*, which was later merged into the *Courant*, being one of the editors and owners of this paper until his death. Mr. Warner met with his first great literary success with the publication of *My Summer in a Garden* (1870), a series of sketches which had been appearing weekly in the *Courant*. He also wrote many short essays for the Editor's Drawer and the Editor's Study of *Harper's Magazine*, with which he was connected from 1884-98. His collected essays include *Back-log Studies* (1872); *Baddeck and That Sort of Thing*; *As We Were Saying* (1891); *As We Go* (1893), and *The Relation of Life to Literature*. His extensive travels abroad and at home were described in *Saunterings* (1872); *On Horseback* (1888); *Their Pilgrimage* (1886); *A Roundabout Journey* (1883). Mr. Warner was the editor of the "American Men of Letters Series," and his biography of Washington Irving is considered the best of the series. He contributed to *Harper's Magazine Studies in the South and West* (1889), and *Mexican Papers*, in which social and political conditions were discussed. He is also the author of three novels: *A Little Journey in the World* (1889); *The Golden House* (1894), and *That Fortune*. Previously, however, in co-operation with Mark Twain, he wrote *The Gilded Age* (1873), which was intended to be a humorous description of Western life and proved a failure. Warner had a critical, not a creative, intellect, hence he was not a great novelist, but his three successful novels reveal keen observation and sane ideals of American social life.

WAR OF 1812, GENERAL SOCIETY OF THE, is composed of federated State societies, the first of which was founded in Maryland, September 14, 1814, by veterans of the war. The membership of the society now consists of lineal descendants of officers and soldiers and sailors of the War of 1812. It had in 1900 nine State societies and over 800 members. Next general biennial congress at Boston, Mass., June 19, 1902. President-general, John Cadwalader; secretary-general, Captain Henry Hobart Bellas, U. S. A., 421 South Forty-fourth Street, Philadelphia, Penn.

WARREN Lieutenant-General Sir CHARLES, G.C.M.G., K.C.B., military governor of Griqualand West, was born at Bangor, Wales, in 1840, was educated at Cheltenham College, Sandhurst, and Woolwich, and entered the Royal Engineers in 1857. He did survey work at Gibraltar and in Palestine, and in 1876-77 laid out the boundary line between Griqualand and Orange Free State. He fought in the Kaffir

War of 1878, and as major-general commanded the Bechuanaland expedition in 1884-85. After serving at Suakim, London, Straits Settlements, and again at London, he was sent to Africa in 1899 at the head of the fifth division. The brunt of the fighting in Natal fell on him, and it was his division that took Spion Kop by assault on January 23, 1900. (See TRANSVAAL.) In April, 1900, the War Office published a despatch from Lord Roberts dated two months earlier, severely criticising General Warren's imprudence and lack of skill at Spion Kop, but he nevertheless retained his command and the favor of the government. He wrote *Underground Jerusalem* (1874); *The Temple or the Tomb* (1880).

WASHINGTON, a Pacific coast State of the United States, has an area of 69,180 square miles. The capital is Olympia. Washington was organized as a Territory March 2, 1853, and admitted as a State November 11, 1889.

Mineralogy.—The production of coal has exceeded 1,000,000 tons annually since 1888, and has increased steadily each year since 1894. It exceeded 2,000,000 tons for the first time in 1899, when the total product was 2,029,881 short tons, valued at \$3,603,989. The principal producing counties are King, Kittitas, and Pierce. The number of mines in operation during 1899 was 26, as against 23 in 1898. During 1900 several new coal mines were opened and old ones extended. The production for 1900 was roughly estimated at 2,500,000 tons. Of the precious metals, gold yielded 40,000 fine ounces, valued at \$826,873, and silver, 300,000 fine ounces, value, \$183,000. Quarrying in 1899 produced four kinds of stone, as follows: Limestone, valued at \$139,339; sandstone, \$58,395; granite, \$42,766, and marble, \$4837. The total value of all quarry products was \$245,337, as compared with \$169,114 in 1898.

Agriculture.—The following shows the production and value of the principal crops for 1900: Corn, 106,140 bushels, \$62,623; wheat, 25,096,661 bushels, \$12,799,297; oats, 3,016,226 bushels, \$1,206,490; barley, 1,386,267 bushels, \$540,644; rye, 39,169 bushels, \$22,718; potatoes, 1,839,644 bushels, \$864,633, and hay, 846,491 tons, \$8,041,664. Washington ranked fourth among the States in the production of wheat. The crop of hops for 1900 was 35,000 bales, or nearly 7,000,000 pounds. Live stock in 1900 comprised horses, 181,870, valued at \$2,399,968; cattle, 276,154, \$3,313,848; hogs, 71,579, \$143,158, and sheep, 456,693, \$685,046. According to an estimate published in the *Bulletin* of the National Association of Wool Manufacturers, the wool clip for 1900 was: Wool, washed and unwashed, 6,454,892 pounds, and scoured wool, 1,742,821 pounds.

Industries.—In 1900 there were 525 saw and shingle mills in the State, and the total amount of lumber cut during the calendar year was 1,100,000,000 feet, valued at \$11,000,000. The production of shingles was 4,250,000,000, valued at \$5,500,000. In 1899 the only beet-sugar factory in the State, having a capacity of 350 tons of beets per day, was put in operation. One hundred and seven cigar factories reported a combined production of 5,838,496 cigars for the calendar year 1899. In 1900 there were in Tacoma 218 factories of all kinds, with an aggregate capital of \$11,601,500. The total number of employees was 5730, and the manufactured output for the year amounted in value to \$15,785,500. There were 132 jobbing houses, whose sales for 1900 amounted to \$15,332,967. During 1900 there were 142 commercial and business failures in the State—1.55 per cent. of the 9132 business concerns in operation—and the liabilities aggregated \$782,623.

Commerce.—The imports of merchandise in the Puget Sound district during the fiscal year ending June 30, 1900, aggregated in value \$7,148,563, and the exports, \$17,903,107, a decrease of \$91,155 in imports and an increase of \$2,702,787 in exports. The movement of gold and silver was: Imports, \$4,972,974, and exports, \$980,703, making the total foreign trade, \$31,005,347, a net increase in a year of \$5,337,810. Flour exports for 1899-1900 were 1,037,583 barrels, as compared with 688,535 barrels in 1898-99.

Railways.—The new railway construction reported for the calendar year 1900 amounted to 74.78 miles, giving the State a total mileage of 2959.63.

Banks.—On October 31, 1900, there were 79 national banks, of which 31 were in operation, 8 in liquidation, and 12 insolvent. The active capital aggregated \$3,250,000; circulation outstanding, \$1,340,250; deposits, \$21,683,889, and reserve held, \$8,001,650. The State banks, May 31, 1900, numbered 27, and had capital, \$1,349,960; deposits, \$7,308,687, and resources, \$9,533,859, and the private banks, June 30, 1900, numbered 8, with capital, \$339,127; deposits, \$2,933,080, and resources, \$4,332,779. During the year ending September 30, 1900, the exchanges at the clearing houses at Tacoma, Seattle, and Spokane aggregated \$238,893,641, a net increase of \$40,268,844 for the year.

Finances.—The assessed valuation in 1900 was: Real estate, \$177,822,995; personal property, \$38,721,872; railway tracks, \$21,031,656; total, \$237,576,523.

National Guard.—The "National Guard of Washington" consists of 11 staff officers, 73 cavalry, 54 artillery, and 669 infantry. The total number of troops authorized is 1877.

Education.—There were in 1899, 36 public high schools, with 110 teachers and 2988 secondary students, and 13 private secondary schools, with 71 teachers and 515 secondary students. There were also 2 public normal schools, with 17 teachers and 322 students in normal courses. Eight colleges and universities for men and for both sexes reported 102 professors and instructors, 1043 students in all departments, and a total income of \$106,630, and 1 school of technology reported 28 professors and instructors, 300 students in all departments, and a total income of \$155,292. No professional schools were reported.

Population.—The population, according to the United States census, was 349,390 in 1890 and 518,103 in 1900; increase for the decade, 168,713, or 48.3 per cent. The three largest cities, with population in 1900, are Seattle, 80,671; Tacoma, 37,714, and Spokane, 36,848.

Constitutional Amendment.—A constitutional amendment was adopted at the elections in November, giving the Legislature authority to exempt from taxation the personal property, up to \$300 in value, of the head of every family.

Elections.—At the State election in 1900, Rogers, Democratic nominee for governor, received 51,944 votes, and Frink, the Republican candidate, received 49,860. Thus Rogers had a plurality of 2143. The election showed no change in the congressional representatives of Washington. The State Legislature in 1900 consisted, in the Senate, of 15 Republicans and 19 Populists, and in the House, of 68 Republicans, 9 Populists, and 1 Citizen. In 1901 the Legislature will consist, in the Senate, of 26 Republicans and 8 Democrats, and in the House, of 59 Republicans and 21 Democrats. At the national election McKinley received 57,456, and Bryan, 44,905 votes. In 1896 McKinley received 39,152, and Bryan, 51,646 votes. Thus from a Democratic plurality of 12,493 Washington changed to a Republican plurality of 12,623.

State Officers and National Representatives.—State officers for 1900: Executive—governor, John R. Rogers; lieutenant-governor, Thurston Daniels; secretary of state, W. D. Jenkins; treasurer, C. W. Young; auditor, Neal Cheatham; attorney-general, P. H. Winston; adjutant-general, E. H. Fox; superintendent of education, E. J. Browne—all Populists except Winston, Silver Republican.

Supreme Court: Chief justice, M. J. Gordon; associate justices, R. O. Dunbar, M. A. Fullerton, T. J. Anders, J. B. Reavis; clerk, C. S. Reinhart—all Republicans except Reavis, Democrat.

State officers for 1901: Executive—governor, John R. Rogers (Dem.); lieutenant-governor, Harry McBride (Rep.); secretary of state, Samuel H. Nichols (Rep.); treasurer, C. W. Maynard (Rep.); auditor, J. D. Atkinson (Rep.); adjutant-general, E. H. Fox (Dem.); attorney-general, W. B. Stratton (Rep.); superintendent of education, R. B. Bryan (Rep.); commissioner of public lands, S. A. Calvert (Rep.).

Supreme Court: Chief justice, J. B. Reavis; associate justices, R. O. Dunbar, M. A. Fullerton, T. J. Anders, Wallace Mount; clerk, C. S. Reinhart—all Republicans except Reavis (Dem.).

Congressional representatives for 1900 (56th Congress): Francis W. Cushman (Tacoma) and William M. Jones (North Yakima)—both Republicans.

Congressional representatives for 1901 (57th Congress): Same as for 1900.

Senators for 1900 (56th Congress): George Turner (until 1903), Populist, from Spokane; Addison G. Foster (until 1905), Republican, from Tacoma.

Senators for 1901 (57th Congress): Same as for 1900.

WASHINGTON, BOOKER T., principal of the Tuskegee Normal and Industrial Institute (*q.v.*), was born in 1858 or 1859 in Franklin County, Va. His mother was a negro slave; of his father, who was presumably a white, nothing is known. Soon after the war Booker was taken by his mother to Malden, W. Va., where he worked in the salt mines. Later he walked nearly the entire distance of 500 miles to the Hampton Institute in Virginia, where he received his education. In 1881 he was called to organize and take charge of Tuskegee, then an institution in name only, without money, buildings, land, or credit. Mr. Washington's work has since consisted largely in raising year by year the increasing amounts of money required for the school, and in demonstrating by results obtained the value to the negro of an industrial education. In this way he won the confidence of whites and blacks alike, and revolutionized the idea of education previously held. Mr. Washington declared that political rights could not ultimately be denied to any one who could take his place on a basis of economic independence in the industrial life of the South. He decried any attempt by the negroes to force the South to accord them the political equality nominally given them by the federal laws. So far as social equality was concerned, Mr. Washington declared that the races could be as separate as the fingers of the hand, but single as the hand in all that pertained to industrial progress. The aim of the industrial training, as stated by Mr. Washington, is, "First, that the student shall be so educated that he shall be enabled to meet condi-



BOOKER T. WASHINGTON.

(Courtesy of *The Outlook Co.*)

tions as they exist now in the part of the South where he lives—in a word, to be able to do the thing which the world wants done; second, that every student who graduates from the school shall have enough skill, coupled with intelligence and moral character, to enable him to make a living for himself and others; third, to send every graduate out feeling and knowing that labor is dignified and beautiful."

WASHINGTON UNIVERSITY, St. Louis, Mo., incorporated 1853, was brought before the attention of the country in 1900 by a gift of \$5,000,000, bringing the total value of its property to \$5,800,000, exclusive of a new site recently selected for the undergraduate department and new buildings aggregating \$1,100,000 in value. The removal of the undergraduate department will take place about January 1, 1902. The university consists of six departments—the undergraduate, including the College; School of Engineering and Architecture; Henry Shaw School of Botany; St. Louis Law School; School and Museum of Fine Arts; Medical Department (formerly St. Louis and Missouri Medical College), and Dental Department. The number of students is stated at 1939, but nearly two-thirds of these are in the three secondary schools connected with the institution—Smith Academy, Mary Institute, and Manual Training School. The year's income for educational work in all departments was \$188,000. The library is said to contain 15,000 volumes. See **UNIVERSITIES AND COLLEGES**.

WATER GAS. See **GAS**, **ILLUMINATING**, and **FUEL**.

WATER PURIFICATION. The results obtained from the settling reservoirs and slow sand filtration plant at Albany, N. Y., during its first 319 days of actual operation were described in great detail by George I. Bailey, superintendent of the Albany Water-works, in *Engineering News* for August 9, 1900. The actual period involved was from July 26, 1899, to July 1, 1900, during a part of which the filters were not used. The plant is the largest of its kind in the United States, and in the 319 days the total quantity of water treated was 3,817,200,000 gallons, or nearly 12,000,000 gallons a day. The reason for giving the results for less than a whole year was that the period named covered a cycle in the operation of the plant, during which the surface of the beds had been scraped or cleaned 77 times, and the dirty sand thus removed had been washed and replaced. The average cost of purifying 1,000,000 gallons of water was \$1.68 for labor for removing, washing, and replacing sand; \$0.05 for water to wash the sand; \$0.06 for cleaning the settling basin, and \$0.20 for incidentals. This makes a total of \$1.99 for purification alone, to which must be added \$0.34 for chemical and bacterial work and \$2.42 for extra pumping necessitated by the purification works, making a total of \$4.75 per 1,000,000 gallons on account of operating the purification system. To get the full cost of purification, interest and depreciation should be added; but it is not easy to arrive at the proper figures for these items, since the plant is not yet operated to its full capacity. It may be said that the whole plant, including pumping machinery and purification works, cost about \$410,000, on most of which the depreciation will be very light. The available filtering area is 5.6 acres, giving an average daily rate of filtration of about 2,140,000 gallons, and the filters are covered with masonry vaulting. It was found that, as a result of this treatment of the sewer water, between 97.7 and 99.8 per cent. of the bacteria which it contained were removed, the average percentage taken by weeks falling below 98 in but a single instance. Evidently, the percentage of bacteria removed is misleading unless taken in connection with the actual numbers involved, since with 100,000 bacteria per cubic centimetre in the raw water a 99-per cent. reduction would still leave 1000 bacteria in the effluent, while with an original 1000 the same percentage result would leave only 10. During the greater part of the time covered by the record the actual numbers of bacteria in the effluent were often relatively high; but from April 1 to July 1, 1900, on only 2 of 76 days when analyses were made, were the bacteria in the effluent over 100 per cubic centimetre, the actual figures being 165 and 126, against 45,000 and 37,000, respectively, in the water not treated, representing a removal of 99.7 per cent. in each case. Examinations for *Bacilli coli communis*, which is considered as an evidence of sewage pollution, were started in May, 1900. This germ was found in all of 12 samples of raw water taken for examination, ranging from 2 to 10 colonies; but of 18 samples of purified water, the germ was encountered in but one, and then only 1 colony was discovered. The reduction in typhoid fever in Albany since the purification works were started has been most gratifying. For the nine years before the works were put in use there was an average of 85 deaths from typhoid each year. In the first eight months of 1899 the deaths from the same disease numbered 71, but in the last four months with the filter in use there were only 7 such deaths; and in the first six months of 1900 only 17, against 65 for the corresponding period in 1899. It should be said that a portion of Albany is still supplied with unfiltered surface water, but that water is not from the Hudson River, from which the water subjected to filtration is drawn. In April, 1900, a covered slow sand filtration plant for removing iron from ground water was

put in operation at Superior, Wis. In its general design it is like the Albany plant, but it may be operated at a much higher rate.

The report of the Massachusetts State Board of Health for 1899, published in the latter part of 1900, contains an important paper by Mr. Harry W. Clark, chemist to the board, on *The Occurrence of Iron in Ground Waters and Experiments upon Methods of Removal*. Of the forty or more ground-water supplies of Massachusetts cities and towns, "not one is entirely free at all times from iron," Mr. Clark says, "but only a few contain iron in an amount sufficient to be objectionable." From experimental data obtained from Massachusetts water and from practical experience in Massachusetts and elsewhere Mr. Clark concludes that methods of iron removal must be varied to suit the form in which the iron occurs. In some cases aeration, followed by filtration through sand, is sufficient, while in others chemical treatment, combined with filtration, is necessary. Aeration is generally, if not always, a necessary part of the treatment. This Massachusetts report, as well as its predecessors for many years past, contains much information on filtration experiments, together with a statement of the results obtained at the slow sand filtration plant of the city water-works at Lawrence, Mass. Experiments on water purification at Washington, D. C., are set forth at length in a report dated March 28, 1900 (Senate Document No. 259, 56th Congress, first session), submitted by Lieutenant-Colonel A. M. Miller, United States Army. Both slow sand and mechanical filtration were tested, R. S. Weston being in charge of the chemical and bacterial studies. The object was to ascertain the best method of reducing the number of bacteria and turbidity of water from the Potomac River. Even after this water has had some 3½ days of sedimentation these characteristics are prominent, and the conclusions reached were that slow sand filtration alone would be insufficient. Colonel Miller recommended mechanical filtration, but Mr. Weston believed that either that process or slow sand filtration, preceded by coagulation at times of high turbidity, would give satisfactory results. Coagulation, it may be explained, is effected by adding a chemical, generally sulphate of alumina, to the water and giving it an opportunity to gather up the impurities, somewhat as the white of an egg clarifies coffee. Subsequent filtration removes the coagulated mass. The process is generally a necessary accompaniment to mechanical filtration. Opposition to mechanical filtration at Washington has developed, so it is uncertain whether Congress will authorize the carrying out of Colonel Miller's recommendations; but it is expected that either mechanical or slow sand filtration will be adopted within a few years. Water purification experiments at Philadelphia and at New Orleans were begun in 1900, and plans for extensive purification works were being made in Philadelphia, Pittsburg, and Louisville. At the latter place mechanical filters will be installed; at least, advertisements for bids for such a plant were published in December, 1900, the bids to be received in January, 1901. Those interested in the nature and extent of the various water purification plants of the world will find some figures on that subject, together with many details of operation of such plants, in the latest edition of Hazen's *Filtration of Public Water Supplies* (New York, 1900). Mr. Hazen summarizes the capacity of water filtration plants at the close of 1899 as follows: "Estimating the total additional area of sand filters for which figures are not available at 100 acres, and the maximum capacity of sand filters at 3,000,000 gallons per acre daily, and of mechanical filters at 3,000,000 gallons per 1000 square feet of filtering area, the total filtering capacity of all the filters in the world used for public water supplies in 1899 is nearly 1,600,000,000 gallons daily, of which 15 per cent. is represented by mechanical filters and 85 per cent. by sand filters. In the United States the total filtering capacity is nearly 300,000,000 gallons daily, of which 18 per cent. is represented by sand filters, 79 per cent. by mechanical filters, and 3 per cent. by a special type of filters."

WATER SUPPLY. See SANITATION and TYPHOID FEVER.

WATER-WORKS. Probably the most notable of all municipal works are the systems of public water supply. The number of water-works in the United States alone is, at least, 3500, counting only those which furnish water for both public and private purposes. If we include partial systems and works supplying from two to twenty places each, the number of cities, towns, and villages having some sort of public water supply at the close of 1900 was 4500 or even more. These supplies range all the way from the immense and varied works of Greater New York, which since consolidation include many independent plants, to the small lead or wrought-iron pipe line serving spring water to a few struggling houses in some hamlet. The total daily water consumption of Greater New York is, in round numbers, 350,000,000 gallons, or a little over 100 gallons per capita per day. Careful studies made by John R. Freeman and J. J. R. Croes in 1899 and 1900 show conclusively that half of this amount would be sufficient, if there was no waste; but New York has a modest per capita consumption compared with Philadelphia, which uses and

wastes over 200 gallons a day for each man, woman, and child. Two valuable and extensive reports on the present and possible future water supply of New York were published in 1900; one was prepared by Mr. John R. Freeman in behalf of Bird S. Coler, comptroller of New York City, and the other by a committee of engineers, financiers, and others appointed by the Merchants' Association of that city. The reports showed that the city could develop an ample additional supply from either the Housatonic and Ten Mile rivers, which are partly in Connecticut, or from the lower or upper Hudson (Adirondacks). Either of these propositions would involve far less expense than the terms offered in the summer of 1899 by the Ramapo Water Company, which after hasty consideration would, doubtless, have been accepted save for the timely and vigorous protest of Comptroller Coler. The plans for a new supply, outlined in these reports, would provide ultimately from 350,000,000 to 1,500,000,000 gallons of water per day, and would involve the expenditure of scores of millions of dollars, although the unit cost of water would be very low, on account of the scale on which the works would be developed. Both reports contained ample evidence that if the waste of water were only stopped, New York would have an ample supply for years to come; and Mr. Croes, in the Merchants' Association report, laid down a plan for stopping the waste by the use of meters and the reduction of leaks from street mains and house service pipes.

The distinguishing features of public water supply to-day are the methods used to prevent water pollution and to improve the quality of the supply (see WATER PURIFICATION), the curtailment of waste through the use of meters, the substitution of more efficient pumping machinery for low duty pumps, the use of steel and wood stave pipe in place of cast-iron supply conduits, and, in general, the improvement, enlargement, and extension of systems of water-works. Boston and vicinity, through the Metropolitan Water Board; New York, Jersey City, Philadelphia, Washington, Cleveland, Cincinnati, Indianapolis (private company), Chicago, and hosts of smaller cities all have water-works improvements under way. The protection of public water supplies by the purchase of portions of the drainage area of the streams or the shores of ponds or small lakes from which surface supplies are drawn is common in England, and is beginning to be practised here. It was announced in 1900 that the Johnstown Water Company, of Johnstown, Penn., had bought nearly 2 of the 5.5 square miles of the drainage area of Mill Creek above one of the reservoirs of the company, which is its principal source of domestic supply. The company proposes to take steps to reforest this land. Immense sums have been expended by New York City in buying land along the streams and reservoirs making up its Croton drainage area, and the acquisitions are not yet completed. One of the chief objects of such purchases is the prevention of sewage or other pollution from buildings and farmyards near the streams, ponds, and reservoirs.

Electrolysis, or the pitting and final failure of water mains through the action of stray electric currents from electric street railways, continues to injure water mains and other adjuncts of water-works.

Private water companies are seeking to compel the electric railways to return their current direct from the car motors to the power house by means of better rail bonding or the double-trolley system. A number of suits with this object and for drainage claims are now in court. Gas mains are affected in a similar manner, and recently an Indianapolis gas company gained some preliminary advantage in a suit brought against the local street railway company for damages to its gas mains. The case is to be submitted to the higher courts of the State.

A new form of wooden water pipe has been developed at Spokane, Wash., recently and put into use in the Northwest. It is made in sizes of 2 and 8 inches internal diameter and in convenient lengths for shipping; but instead of being bored from a log or other single piece of timber, it is composed of staves, wound with galvanized steel wire under tension, to enable it to resist internal pressure. The staves are made from kiln-dried Oregon fir, seven-eighths to 1½ inches thick. Joints are made in the hub-and-socket form for small sizes, while butt joints and sleeves are used for the larger sizes. Some 8-inch pipe of this kind, wound with copper wire, has been used in mines near Butte, and is said to have withstood the acid water. This pipe is similar to the wood-stave pipe used for many years in the West (see PIPE LINES), except that the new pipe is made in smaller sizes and set lengths at the factory, instead of being built continuously in the trench. It is also wound with wire, instead of having steel bands with threads and nuts at intervals. See also DAMS; PIPE LINES, and WATER PURIFICATION.

WATER-WORKS ASSOCIATION, AMERICAN, organized 1880 for the improvement of water-works construction and administration, had in 1900 a membership of 500. The twenty-first annual convention will be held at New York about the middle of June, 1901. President, C. E. Balling; secretary, Peter Milne, Bennett Building, Nassau and Fulton Streets, New York City.

WEBB, HENRY WALTER, formerly third vice-president of the New York Central

Railroad, and actively connected with its management, died at Scarborough, N. Y., June 18, 1900. Born in 1852, he was the son of General James Watson Webb, editor of the old New York *Courier and Enquirer*. He was graduated at the School of Mines of Columbia College in 1873, and two years later from the law school of the same institution. In 1882 he left his legal practice to enter a brokerage business with his brother, Dr. W. Seward Webb. Four years later he became vice-president of the Wagner Palace Car Company, and in 1890 he was made third vice-president of the Central Hudson road. That same year witnessed the great strike of the Knights of Labor on the Vanderbilt system, and the difficulties arising therefrom were so successfully met by Mr. Webb that the strike was a flat failure. Ill health forced him to retire from business in 1898. He was a director of numerous corporations. From 1886 to 1889 he was a member of the New York City Board of Education.

WEBSTER, Sir RICHARD EVERARD, Lord ALVERSTONE, was appointed lord chief justice of England in the place of the late Lord Russell of Killowen. He was born in 1842, and studied at King's College School, the Charterhouse, and Trinity College, Cambridge. Called to the bar in 1868, he became queen's counsel ten years later. His extensive practice included the more important commercial and railway cases of the day and numerous appeal cases in the House of Lords. He was defeated in the elections of 1880, but began to take a prominent part in politics in 1885. It was the first year of Lord Salisbury's ministry, and Lord Alverstone was appointed attorney-general. He held the office from 1886 to 1892, and from 1895 until May, 1900, when he was appointed master of the rolls. At the same time Lord Alverstone was raised to the peerage and resigned his seat in the Lower House, where he had represented the Isle of Wight since 1885. Lord Alverstone appeared on behalf of the *Times* before the Parnell Commission. In the Bering Sea arbitration case in 1893 he was one of the British members of the court, and the same year was appointed Grand Commander of the Order of St. Michael and St. George. He was also one of the British counsel before the Venezuelan Commission.

WEIHAIWEL. See CHINESE EMPIRE (paragraph Cities of China).

WELLESLEY COLLEGE, for women, at Wellesley, Mass., established 1875. At the beginning of the college year 1899-1900 Miss Caroline Hazard was inaugurated as president. Miss Woolley resigned from the headship of the Bible department to take the presidency of Mount Holyoke College, Dr. Luce was appointed dean of Oberlin College, Professor Rush Rhees resigned to become the president of Rochester University, and Miss Sanderson assumed the headship of the Bible department at Wells College. Miss C. M. Breyfogle, from the universities of Berlin and Chicago, was appointed an associate professor in the Wellesley Bible department. Hamilton C. MacDougall, of the Royal College of Organists, was appointed head of the department of music. The department of history and economics was divided, and the study of Spanish revived. An increasing number of students came to Wellesley for the Master of Arts degree, and there were twenty-seven candidates during 1899-1900, nine of whom received the degree at the end of the year, two each in English, mathematics and physics, art, and Greek, and one in German. Some 136 students took the B.A. degree. The number of students at the beginning of the year was 716. The event of the year at Wellesley was the extinction of the college debt by the collection of \$109,224 and the receipt of \$100,000 from Mr. John D. Rockefeller, which had been promised upon the extinction of the debt. About \$2200 was received in additional gifts of the year. A call is made for still further funds, as the college receipts are still behind its expenses, which for 1899-1900 amounted to \$253,049. The force of instructors has been somewhat curtailed, and efforts made to reduce expenses in the care of buildings and grounds. The latter include about 300 acres under daily observation, with some miles of driveways and walks. Pressing needs besides an endowment fund are provisions for a library, a science hall, and a gymnasium building. New buildings of the year were the Whitin Observatory, including a 12-inch refracting telescope, polarizing photometer, star and sun spectroscopes and Rowland concave grating spectroscope, and the dormitory Wilder Hall.

WELLINGTON, Third Duke of, HENRY WELLESLEY, died June 8, 1900. Born April 5, 1846, he was educated at Eton; became a lieutenant-colonel in the Grenadier Guards; sat in the House of Commons from 1874 to 1880 as a Conservative, and succeeded his uncle in the dukedom in 1884. His ordinary life was that of an English country gentleman, and had little in common with that of the great duke, his grandfather, or with that of his father, Major-General Lord Charles Wellesley.

WELLS, DAVID DWIGHT, who gained considerable fame by his two novels, *Her Ladyship's Elephant* (1898) and *His Lordship's Leopard* (1900), died at Norwich, Conn., June 15, 1900. He was born in 1868, the son of the late David A. Wells, the celebrated economist. He graduated at Harvard in 1893, and was second secretary of the United States Embassy in London from 1894 to 1896. Both of his books are

bubbling over with farcical humor. They lampoon certain foibles in English society, and were perhaps more popular in that country than in the United States.

WELLS COLLEGE, founded 1868, an institution for the higher education of women, at Aurora, N. Y. In 1899-1900 it had 22 instructors and 103 students, and its library contained 7606 volumes. The college has an endowment of \$200,000. Its receipts for the last academic year are reported as \$64,496, including \$9375 in benefactions. Acting president, Professor Jasper W. Freley in place of William E. Waters, Ph.D., whose resignation went into effect June 13, 1900. See **UNIVERSITIES AND COLLEGES**.

WELSBACH LIGHT. See **GAS, ILLUMINATING AND FUEL**.

WESLEYAN METHODIST CONNECTION OF AMERICA, organized 1843, at Utica, N. Y., by members of the Methodist Episcopal Church who were dissatisfied with some practices of that body. The denomination numbers 17,201 members, with 587 ministers and 506 churches, a slight gain in membership since 1890.

WESLEYAN UNIVERSITY, at Middletown, Conn., founded in 1831. The institution, though drawing its patronage principally from the Methodist Episcopal Church, is not sectarian. Wesleyan offers post-graduate courses in its three departments, classical, Latin-scientific, and scientific. In 1899-1900 its faculty numbered 35 and its student body 340. An observatory is connected with the university and its library is equipped with 57,000 volumes, an increase of 2900 volumes in the last college year. Wesleyan has an endowment of \$1,946,482 and buildings and grounds worth \$685,000. Its income for 1899-1900 was \$99,540, exclusive of gifts, amounting to \$100,000. See **UNIVERSITIES AND COLLEGES**.

WESTERN AUSTRALIA, a state of the Australian commonwealth under the constitution taking effect January 1, 1900, occupies the entire western part of the continent, along the one hundred and twenty-ninth meridian of east longitude, touching on the east the state of South Australia and the Northern Territory, which is regarded as a part of that state. The capital is Perth.

Area, Population, and Education.—Western Australia is the largest of the Australian states, having a total estimated area of 975,920 square miles, divided into 31 districts. This territory is nearly one-third as large as the total area of the United States. Exclusive of the uncivilized aborigines, whose numbers, though unknown, are certainly not large, the estimated population on June 30, 1900, was 178,196. Perth has about 43,000 inhabitants, and Fremantle, the principal port, about 16,000. The principal religious denominations, in the order of their numerical importance, are the Anglican, Roman Catholic, and Wesleyan. Education is compulsory, but not free. The schools, government and private, number about 250, with about 20,000 pupils. There are two industrial schools, two native and half-caste institutions, and one reformatory. There is also a school in Perth for the higher education of boys.

Government and Finance.—The form of government of Western Australia, which was the last of the Australian colonies to obtain responsible government, was not changed by the adoption of the new constitution of the federated commonwealth. The constitution of Western Australia, dating from 1890, places the executive authority with a governor, appointed by the crown and assisted by a cabinet of six ministers responsible to the legislature. The governor from 1895 to 1900 was Sir Gerard Smith; in the latter year he was succeeded by Sir Alexander C. Onslow, who has the title of administrator. The legislative power is vested in a legislature of two houses, the legislative council and the legislative assembly, members of the former, 24 in number, being elected by popular vote for terms of six years, and members of the latter, 44 in number, being elected in the same manner for terms of four years.

Of the revenue, nearly three-eighths accrues from customs, the remainder being derived largely from railways, posts, and the leases of public lands. For 1900 the revenue and expenditure were £2,875,396 and £2,615,675 respectively. The revenue was about £79,000 above and the expenditure about £25,000 below the estimate. On June 30, 1899, the public debt amounted to £10,488,363, and one year later £11,804,178.

Industries and Commerce.—The people engage in mining, cattle raising, and agriculture. At the beginning of 1899 the live stock in the country comprised 2,244,888 sheep, 245,907 cattle, and 62,442 horses. During the last few years agriculture has increased in importance, though in 1898 the tilled land amounted to only about 171,000 acres—less than one-thirtieth of 1 per cent. of the total area. At the beginning of 1900 about 79,000 acres were under hay, 75,000 acres under wheat, 3000 acres under oats, 3000 acres under the vine, and 2000 acres under barley. The area of land in 1900 alienated or in process of alienation from the crown on various conditions of purchase or leasehold exceeded 107,250,000 acres. The country seems to be capable of supporting a large population. Agriculture has made proportionately

more progress than either viticulture or horticulture, but success in the cultivation of the vine and fruits is probable. There are immense tracts of forest, large areas in the southwestern part of the state being covered by the valuable jarrah tree, sometimes erroneously called mahogany. The mineral wealth of Western Australia includes gold, lead, copper, tin, and coal. The gold production of the country is larger than that of any other Australian state, and one of the largest in the world. The largest output has been in the East Coolgardie district, Coolgardie ranking second; other gold-producing districts are Kimberley, Ashburton, Pilbarra, Murchison, Donnybrook, Dundas, Peak Hill, and Yilgarn. In 1898 there were 3069 leases of gold mines. The production has increased rapidly, as follows: 1895, 231,512 ounces; 1896, 281,265 ounces; 1897, 674,994 ounces; 1898, 1,050,184 ounces. The total production of Australasian gold in the calendar year 1899 was 4,438,139 ounces, valued at £16,174,128 (\$78,703,307), of which Western Australia contributed 1,643,877 ounces, valued at £6,246,732 (\$30,396,598). The total gold yield of the state from January 1, 1886, to October 31, 1900, was 5,621,663 ounces, valued at £21,362,322 (\$103,949,059). In 1898 the output of copper and tin was valued at £7126.

The commerce of Western Australia is principally with Great Britain and British possessions. Of the imports from countries other than these, amounting to about £285,000, about one-third came from the United States. The exports to the United States are unappreciable. The total values of imports and exports, including bullion and specie, have been as follows:

	1896.	1897.	1898.	1899.
Imports.....	£6,493,557	£6,418,565	£5,241,965	£4,473,532
Exports.....	1,650,226	3,940,098	4,960,006	6,985,642

Of the amounts for the last-named year, the British Empire was represented by 90 per cent. in the imports and 98.8 per cent. in the exports. The values of the principal exports for 1899 were placed as follows: Gold, £5,451,368; timber, £553,198; wool, £423,296; pearl-shells, £90,667; sandal-wood, £29,719; pearls, £20,000. The leading imports are iron and steel goods, machinery, wearing apparel, cotton textiles, provisions, leather, malt liquors, and tobacco. In 1899 there entered at the ports (principally Fremantle and Albany) 685 vessels, of 1,333,052 tons, and cleared 668 vessels, of 1,305,596 tons.

Communications.—There are 1850 miles of railway in operation, of which all but 495 miles are owned by the government. Since 1895, 782 miles have been constructed. Perth is connected by rail with Fremantle, Albany, Cue, and various towns in the gold fields. At the beginning of 1899 there were 8650 miles of telegraph wire in the state. A submarine cable, by which communication with Great Britain is effected, touches at Roebuck Bay on the northwest coast. In addition, there is a line through Eucla to Adelaide in South Australia. The railways are on a paying basis, and it is said that their net earnings amount to 4 per cent. on the cost after providing 1 per cent. for a sinking fund. The estimated amount expended on public works and railways within the last few years is £8,000,000, and Fremantle Harbor has been made one of the finest in the Southern Hemisphere.

Events of 1900.—A Women's Suffrage bill was passed by both houses in February, 1900. Western Australia was the last of the colonies to accept the proposal of federation. The measure was rejected in 1899, chiefly on account of its tariff provisions; but on May 31, 1900, it was carried by the legislative assembly and later by both the assembly and council. Submitted to the popular vote on July 24, the measure was approved by a vote of 44,704 to 19,691. This rendered the federation scheme complete. Previous to this time, when it seemed not improbable that the colony would finally reject the measure, a strong movement was instituted in the gold-mining districts in favor of separating from the colony and then joining the federation. In 1900 Sir John Forrest, who has been premier of Western Australia since the system of responsible government was established in that colony in 1890, announced that he wished to be relieved of the duties of the premiership in the early part of the following year. See AUSTRALIAN FEDERATION.

WESTERN RESERVE UNIVERSITY, Cleveland, O., founded in 1884, two years after the removal of Adelbert College (founded 1826), now its academic department, from Hudson, O., to Cleveland. The faculty during 1899-1900 numbered 137, and the student body 717, as follows: Graduate school, 17; Adelbert College, 193; college for women, 171; medical, 144; law, 101; dental, 91. The increase of the university library for the year was 1749 volumes (218 by gift) and 458 pamphlets, bringing the total collection of volumes up to about 48,000. The total income for the year was about \$225,000. The whole endowment amounts to about \$3,000,000. The new laboratory of biology, costing \$40,000, was occupied during the year, and

the new 10½-inch telescope presented by W. R. Warner and Ambrose Swasey was put into use. The library received gifts aggregating \$15,000 for the immediate purchase of books. Money was raised on loan to secure an important addition of 8000 volumes for the law school collection, whose library now contains 13,000 volumes, being exceeded in size, it is stated, only by those of Harvard, Pennsylvania, Columbia, Cornell, and Michigan. During the year the new rule went into effect whereby matriculates in law must be qualified to enter the freshman class in Adelbert College. The law course covers three years. The medical college in 1900 for the first time had four classes in consequence of the development of the course. Beginning with the academic year 1901-02 students entering this department must have a training equivalent to that represented by the first three years in a good college. A chapel for the college of women will be built during 1901. In 1901 seventy-five years will have elapsed since the foundation of the old college for men at Hudson, the anniversary of which is to be properly observed. See **UNIVERSITIES AND COLLEGES**.

WEST INDIAN HURRICANES. See **TEXAS** (paragraph Galveston Disaster).

WEST INDIES, a large group of islands on the Caribbean Sea, comprises the island of Haiti, which is divided into the republics of Haiti (*q.v.*) and Santo Domingo (*q.v.*), Cuba (*q.v.*), Porto Rico (*q.v.*), and a few smaller islands belonging to the United States; the Windward and Leeward groups (*q.v.*), Jamaica (*q.v.*), the Bahamas (*q.v.*), and a few others belonging to Great Britain; Martinique (*q.v.*), Guadeloupe (*q.v.*), and a few smaller islands in the possession of France; the Danish West Indies (*q.v.*), the Dutch colony of Curaçao (*q.v.*), St. Eustache, Sala, and Aruba, and finally the Venezuelan islands of Tortuga, Margarita, and Coche Cuagua.

British West Indies.—The British possessions in the West Indies have a total area of over 13,000 square miles, and a population of about 1,500,000, and are divided into 6 groups. The chief industry in the British West Indies has been the cultivation of sugar cane. But with the liberation of the slaves in 1834 and the introduction of beet sugar into Europe, there has been a steady decline in the prosperity of the West Indies, and at the present time most of the islands in which the cultivation of sugar cane is the chief industry are on the verge of ruin. This condition of affairs is due mainly to the fact that the planters cannot successfully compete with the European beet-sugar manufacturers, who, besides having the advantage of improved machinery and modern business methods, are to a considerable extent subsidized by their governments. Accordingly, the amount of cane sugar imported into Great Britain decreased from 455,962 tons in 1871 to 382,000 tons in 1896, while the imports of beet sugar increased from 232,850 tons to 1,144,000 tons during the same period. In accordance with the recommendations of the royal commissioners appointed to inquire into the industrial conditions of the West Indies, several reforms have been introduced. But their effectiveness is doubted, and it is the general belief that nothing short of a countervailing duty on European sugar by Great Britain could restore the sugar industry of the West Indies to its former condition. While it is conceded that the introduction of modern methods of manufacturing, together with an improvement in the transportation facilities of the islands, would improve conditions to a certain extent, the large amount of capital required for the execution of these measures makes them almost impossible, at least so long as Great Britain pursues her present policy of free trade. The benefit of the preferential tariff extended to the West Indies by the Dominion of Canada is comparatively insignificant on account of the small amount of sugar consumed in the Dominion. Even this limited market, however, the West Indies must share with the United States, as is evidenced by the fact that the amount of sugar imported into the Dominion of Canada from the West Indies during 1899 was only about \$25,000 more than the amount imported from the United States in the same period (\$607,393 against \$582,725). There was considerable speculation at the close of the year as to the probability of a discrimination in favor of the West Indies in case a sugar tax should be made a feature of the coming British budget. The general belief was, however, that the pursuit of such a policy would be both detrimental to the British industries in which sugar is used, and incompatible with the principles of free trade.

WEST POINT, UNITED STATES MILITARY ACADEMY. See **MILITARY ACADEMY, UNITED STATES**.

WEST VIRGINIA, a central eastern State of the United States, has an area of 24,780 square miles. The capital is Charleston. West Virginia became a State on June 20, 1863.

Mineralogy.—In 1899, West Virginia continued to hold the third rank as a coal-mining State, which she first gained in 1896, although when the comparisons are based upon the value of the product, instead of on the tonnage, Ohio takes third place, and West Virginia fourth. The total output in 1899, 19,252,995 short tons,

valued at \$12,053,268, was an increase of 2,551,996 short tons in a year. The State held second rank in the production of petroleum, the yield in 1899 being 13,910,630 barrels, valued at \$18,014,766. The average price per barrel rose from \$0.913 in 1898 to \$1.295 in 1899, and consequently, although the production in both years was about the same, the total value increased \$5,588,407. The iron ore production of West Virginia is included with that of Virginia (*q.v.*). Quarrying yielded only two varieties of stone, limestone and sandstone, the total value of the product being \$92,662.

Agriculture.—The following shows the production and value of the principal crops for 1900: Corn, 19,299,708 bushels, \$9,649,854; wheat, 4,452,895 bushels, \$3,428,729; oats, 2,768,451 bushels, \$941,273; rye, 127,796 bushels, \$81,789; buckwheat, 223,958 bushels, \$125,416; potatoes, 3,029,120 bushels, \$1,544,851; and hay, 547,600 tons, \$7,337,840. The number and assessed value of farm animals in 1900 was as follows: Horses, mules, asses, and jennets, 253,340, \$7,318,905; cattle, 999,585, \$8,006,009; sheep, 637,013, \$1,425,160; and hogs, 540,180, \$922,373. The estimated wool clip for 1900 was: Wool, washed and unwashed, 2,208,956; wool, scoured, 1,170,757. The value of the poultry industry for the two years 1899 and 1900 was estimated at \$1,781,884.

Industries.—The number of employees reported by 500 manufacturing establishments on January 1, 1900, was 40,221, an increase of 48 per cent. within three years. Of the 500 establishments, 305 reported an advance in wages since January 1, 1897, while only 3 reported a reduction. The following table shows the number of new industries established in West Virginia between March, 1897, and January 1, 1900, together with the number of employees, amount of wages paid monthly, and capital invested, for each industry.

INDUSTRIES.	Number reporting.	Number of employees.	Monthly wages.	Capital invested.
Amusements.....	4	47	\$1,100	\$14,550
Banking.....	19	35	4,150	544,980
Brick and clay.....	8	430	15,300	577,000
Breweries.....	2	28	1,225	50,000
Coal and coke.....	32	3,397	128,188	4,368,000
Contractors.....	5	87	4,400	3,085,000
Drugs.....	6	27	1,315	78,350
Electric plants.....	6	29	6,800	77,000
Flour.....	5	44	2,090	123,000
Glass.....	6	1,080	20,900	307,000
Iron and steel.....	4	352	7,396	802,700
Lumber.....	36	1,968	59,682	2,511,700
Machinery.....	6	58	2,998	76,600
Mercantile.....	27	175	9,283	503,250
Miscellaneous.....	47	1,072	34,405	4,083,400
Oil and gas.....	30	222	11,180	1,082,250
Publishing.....	12	197	5,082	150,517
Textiles.....	5	331	8,550	140,000
Telephone.....	24	947	6,768	300,180
Transportation.....	14	419	15,190	4,375,900
Totals.....	293	10,186	\$345,816	\$22,842,547

In 1899 there were 155 manufacturers of cigars in the State, and 25 of tobacco, and their combined production for the calendar year was 82,846,723 cigars and 3,845,836 pounds of tobacco, chiefly smoking. There were 15 grain and fruit distilleries in operation, and the amount of fruit brandy produced for the fiscal year ending June 30, 1900, was 1895 gallons; spirits rectified, 169,306 gallons; distilled spirits gauged, 782,441 gallons; and fermented liquors produced, 155,068 barrels. The output of pig iron in 1900 was 166,759 long tons, as against 187,858 long tons in 1899. In 1899 West Virginia and Indiana together produced 178,006 kegs of cut nails.

Railways.—The new railway construction reported for the calendar year 1900 amounted to 225.42 miles, giving the State a total mileage of 2457.43. The total tax on railroads paid into the State fund for the fiscal year ending September 30, 1900, was \$415,019.04. The railroad tax paid into the general school fund was \$21,715.99.

Banks.—On October 31, 1900, the number of national banks was 49, of which 41 were in operation and 8 in liquidation. The active capital aggregated \$3,878,000; circulation outstanding, \$2,448,507; deposits, \$16,196,133; and reserve held, \$4,749,285. The State banks, November 1, 1900, numbered 83, and had capital, \$3,201,396; deposits, \$18,999,142, and resources, \$24,713,233. There were also, June 30, 1900,

5 stock savings banks, with capital, \$248,280; depositors, 8202; deposits, \$1,472,889, and resources, \$2,205,508; and one mutual savings bank, with depositors, 4167, deposits, \$453,518, and resources, \$467,937.

Finances.—The balance in the State treasury on October 1, 1899, was \$1,119,212; total receipts for the fiscal year, \$1,806,015; total receipts plus balance, \$2,925,227; total disbursements, \$1,790,478; balance, October 1, 1900, \$1,134,749. On September 30, 1900, the assets of the school fund (irreducible) amounted to \$1,040,969, an increase of \$67,656 in a year. Under the State constitution, the interest accruing from the school fund can be used only for the support of the schools, and any surplus remaining unexpended at the close of a fiscal year must be added to and remain a part of the capital of the school fund. Since this fund, already large, is increasing at the rate of about \$50,000 a year, the State treasurer, in his annual report, urged the advisability of transferring money now being paid into the school fund over to the State fund, that it might become available for all State purposes, and so reduce taxation.

Education.—For secondary education in 1899, there were 26 public high schools, with 74 teachers and 1778 secondary students; and 12 private secondary schools, with 54 teachers and 593 secondary students. There were also 7 public normal schools, with 43 teachers and 1011 students in normal courses; and 2 private normal schools, with 11 teachers and 255 students in normal courses. Three colleges for men and for both sexes reported 78 professors and instructors, 768 students in all departments, and a total income of \$164,522; and 1 college for women reported 4 professors and instructors, 29 preparatory and collegiate students, and a total income of \$2100. One law school was reported, having 3 instructors and 133 students.

Population.—According to the United States census, the population in 1890 was 762,794; in 1900, 958,800; increase for the decade, 196,006. The largest city is Wheeling, with a population, in 1900, of 38,878.

Elections.—At the State elections, 1900, the Republican nominee for governor, White, received 118,807 votes, and the Democratic nominee, Holt, received 100,226. White's plurality was thus 18,581.

The election resulted in a change of two of the four representatives to Congress. J. H. Gaines (Rep.) was elected to succeed D. E. Johnston (Dem.) in the third district; and James A. Hughes (Rep.) was elected to succeed Romeo H. Freer (Rep.) in the fourth district. The State Legislature in 1900 consisted, in the Senate, of 15 Republicans and 11 Democrats, and in the House, of 34 Republicans and 37 Democrats. In 1901 the Legislature will consist, in the Senate, of 17 Republicans and 8 Democrats and in the House, of 50 Republicans and 21 Democrats.

In the national election McKinley received 119,780 votes, and Bryan, 98,791 votes. In 1896 McKinley received 104,414, and Bryan, 92,927. Thus McKinley's plurality increased from 11,487, in 1896, to 21,060 in 1900.

State Officers and National Representatives.—State officers for 1900: Executive—governor, George W. Atkinson; secretary of state, W. M. O. Dawson; treasurer, M. A. Kendall; auditor, L. M. La Follette; attorney-general, E. P. Rucker; superintendent of schools, J. R. Trotter; adjutant-general, J. W. M. Appleton—all Republicans.

Supreme Court of Appeals: President, M. H. Dent; judges, J. W. English, Henry Brannon, and H. C. McWhorter; clerk, J. A. Holley—all Democrats, except McWhorter (Rep.).

State officers for 1901 (until March 1): Same as for 1900.

Supreme Court of Appeals: President, Henry Brannon; judges, George Poffenbarger, M. H. Dent, and H. C. McWhorter; clerk, J. A. Holley—all Democrats, except McWhorter (Rep.).

Congressional representatives for 1900 (56th Congress): Blackburn B. Dovener (Wheeling), Alston G. Dayton (Philippi), David E. Johnston (Bluefield), and Romeo H. Freer (Harrisville)—all Republicans, except Johnston, Democrat.

Congressional representatives for 1901 (57th Congress): Same as for 1900, except that J. H. Gaines and James A. Hughes succeed D. E. Johnston and Romeo H. Freer respectively.

Senators for 1900 (56th Congress): Stephen B. Elkins (until 1901) and N. B. Scott (until 1905)—both Republicans.

Senators for 1901 (57th Congress): Nathan B. Scott (until 1905), from Wheeling, Republican; one vacancy.

WHARTON, Mrs. EDITH, who published in 1900 *The Touchstone*, a novel of serious interest, was born and educated in New York, but has travelled extensively abroad. Her first stories appeared in *Harper's* and *Scribner's* some years ago and attracted little attention. In 1897 she published a book on the *Decoration of Houses*, in collaboration with Mr. Ogden Codman, and in 1899 *The Greater Inclination*, a collection of short stories. She is especially able in the psychological study of motive. Her style is finished and epigrammatic.

WHEAT. The wheat crop of the United States for 1900 is given as 522,229,505 bushels, a decrease of 25,000,000 bushels from 1899, and the smallest crop since 1890. This decrease in the crop is mainly the result of the drought, and the States most affected are Ohio, Indiana, and North Dakota. The wheat crop of Kansas, on the other hand, shows a remarkable increase from 36,468,044 to 82,488,655 bushels. In spite of the deficiency of the crop, as compared with 1899, its value shows an increase of about \$4,000,000 over the preceding year on account of the higher prices prevailing during 1900. The average price for the year is given as 61.9 cents, against 58.4 cents in 1899. The high-water mark was reached in June, when the discouraging outlook for the crops forced the price of spring No. 1 up to 87½ cents and that of No. 2 red winter to 96¼ cents. But this rise was only temporary, and prices soon went down to their normal level.

The following table, published by the United States Department of Agriculture, gives the acreage and crop for 1900 by States.

STATES AND TERRITORIES.	WHEAT.				
	Acreage.	Yield per acre.	Production.	Value per bushel.	Total value.
		<i>Bushels.</i>	<i>Bushels.</i>	<i>Cents.</i>	<i>Dollars.</i>
Maine.....	2,090	19.5	40,755	80	36,600
New Hampshire.....	496	16.3	8,085	93	7,436
Vermont.....	3,489	23.5	81,992	78	63,954
Massachusetts.....					
Rhode Island.....					
Connecticut.....	330	20.8	6,964	82	5,628
New York.....	367,015	17.7	6,496,166	77	5,002,046
New Jersey.....	122,753	19.1	2,344,583	74	1,734,901
Pennsylvania.....	1,502,321	13.5	20,281,334	72	14,602,660
Delaware.....	73,864	20.3	1,479,189	70	1,035,397
Maryland.....	778,864	19.5	15,187,848	71	10,783,372
Virginia.....	791,750	11.9	9,421,982	72	6,788,791
North Carolina.....	630,917	9.6	5,990,803	68	4,067,896
South Carolina.....	238,092	9.0	2,142,828	101	2,164,366
Georgia.....	550,674	9.1	5,011,183	95	4,760,576
Florida.....					
Alabama.....	96,456	9.5	916,351	89	815,592
Mississippi.....	4,243	9.6	40,781	84	34,256
Louisiana.....					
Texas.....	1,271,517	18.4	23,295,913	64	14,973,264
Arkansas.....	266,279	10.1	2,699,418	65	1,748,123
Tennessee.....	1,181,423	9.9	11,696,088	79	9,239,910
West Virginia.....	454,377	9.8	4,452,895	77	3,423,729
Kentucky.....	957,149	13.0	12,442,646	69	8,565,764
Ohio.....	1,430,646	6.0	8,583,676	71	6,061,922
Michigan.....	1,219,969	7.6	9,371,764	69	6,397,517
Indiana.....	1,209,755	5.3	6,411,702	70	4,483,191
Illinois.....	1,353,236	13.0	17,932,088	64	11,508,584
Wisconsin.....	849,458	15.5	13,166,599	64	8,426,633
Minnesota.....	4,965,643	10.5	51,509,223	63	32,450,689
Iowa.....	1,397,822	15.6	21,798,223	59	12,860,902
Missouri.....	1,507,737	12.5	18,846,718	63	11,872,469
Kansas.....	4,660,376	17.7	82,488,655	55	45,369,769
Nebraska.....	2,066,825	12.0	24,801,900	53	13,145,097
South Dakota.....	2,920,244	6.9	20,149,684	58	11,698,617
North Dakota.....	2,689,022	4.9	13,176,213	58	7,642,304
Montana.....	72,555	26.6	1,929,963	61	1,177,377
Wyoming.....	20,819	17.6	366,414	76	278,475
Colorado.....	318,899	22.6	7,207,177	59	4,238,139
New Mexico.....	183,207	21.0	3,847,347	63	2,434,136
Arizona.....	25,045	14.6	363,657	79	289,689
Utah.....	176,896	20.9	3,697,106	55	2,033,405
Nevada.....	40,457	24.5	991,196	70	693,637
Idaho.....	149,261	20.8	3,104,029	46	1,428,139
Washington.....	1,067,943	23.5	25,096,661	51	12,789,267
Oregon.....	1,173,769	13.8	16,198,012	55	8,968,607
California.....	2,771,226	10.3	28,543,623	56	16,553,264
Oklahoma.....	981,967	19.0	18,657,373	53	9,888,496
United States.....	42,495,385	12.29	522,229,505	61.9	323,515,177

The exports of wheat from the United States during the calendar year 1900 amounted to 99,079,153 bushels, valued at \$70,976,433, against 109,635,161 bushels, valued at \$81,447,405 in the preceding year. The exports of wheat flour decreased from 18,717,161 barrels, valued at \$70,082,417, to 18,632,509 barrels, valued at \$68,017,605. The following table, published by the *Bulletin des Halles*, gives the world's estimated wheat crop for 1900.

COUNTRIES.	Probable crop in 1900.	Crop of 1899.	Probable exports (*) or imports (+) 1900-01.	COUNTRIES.	Probable crop in 1900.	Crop of 1899.	Probable exports (*) or imports (+) 1900-01.
Europe:	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	America:	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>
Russia.....	358,969,060	354,712,500	* 76,617,900	Chile.....	13,620,960	14,472,270	* 1,986,390
France.....	305,062,750	306,063,900	+ 11,350,800	Brazil, Antilles, and others.....			+ 14,188,500
Hungary.....	148,168,770	148,127,940	* 45,970,740				
Austria.....	44,836,660	49,659,750	+ 47,957,130	Total.....	602,085,410	794,748,560	* 234,677,790 + 14,188,500
Italy.....	122,304,970	131,669,280	+ 26,958,150				
Germany.....	122,021,100	138,195,990	+ 39,727,800	Asia:			
Spain.....	119,188,400	94,405,410	+ 5,959,170	India.....	188,707,060	243,683,360	* 14,188,500
Romania.....	60,443,010	26,106,840	* 25,539,300	Asia Minor.....	85,471,250	81,314,700	* 2,270,160
United Kingdom	53,916,300	69,523,650	+ 198,639,000	Persia.....	22,134,060	19,868,900	* 1,702,620
Bulgaria.....	39,727,800	25,823,070	* 10,215,720	Syria.....	11,684,570	9,981,960	* 1,986,390
Turkey in Europe	34,063,400	25,355,530	* 5,107,860	China, Japan, and others.....			+ 14,188,500
Belgium.....	17,593,740	21,282,750	+ 35,471,250				
Servia.....	11,634,570	9,991,950	* 2,837,700	Total.....	257,946,980	309,633,900	* 20,147,670 + 14,188,500
Roumania.....	9,981,960	7,661,700	* 2,270,160				
Portugal.....	7,945,560	6,242,940	+ 5,107,860	Africa:			
Greece.....	5,959,170	5,391,630	+ 4,540,320	Algeria.....	22,701,600	17,309,970	* 5,675,400
Sweden.....	4,540,320	4,256,550	+ 3,405,240	Egypt.....	12,769,650	11,360,800	* 1,702,620
Netherlands.....	4,256,550	6,242,940	+ 15,607,350	Tunis.....	5,959,170	4,256,550	* 1,986,390
Denmark.....	4,256,550	4,256,550	+ 14,188,500	Cape Colony....	3,972,790	4,256,550	+ 5,107,860
Switzerland.....	3,669,010	4,256,550	+ 14,188,500				
Norway and other's	2,558,980	2,553,930	+ 2,270,160	Total.....	45,408,300	37,173,870	* 9,364,410 + 5,107,860
Total.....	1,475,036,460	1,501,710,840	+ 168,559,380 + 413,736,660	Australasia.....	58,172,850	58,172,850	* 11,350,800
America:				Grand total.	2,498,594,850	2,625,440,040	* 444,100,050 + 447,221,590
United States....	510,786,000	543,419,550	* 164,586,600				
Argentine Re- public.....	85,131,000	101,589,660	* 56,754,000				
Canada.....	52,497,450	65,267,100	* 11,350,800				

According to the above table, the total wheat crop of the world shows a decrease of about 120,000,000 bushels from the preceding year. The wheat crop of Great Britain is given in the *London Economist* as 52,630,809 bushels, against 65,529,325 bushels in 1899; and the yield per acre is estimated at 28½ bushels, or nearly 4¼ bushels less than in the preceding year, and about 6¼ bushels below the yield of 1898. The prices, however, were, on the whole, even, the range of fluctuation being 4s. The average official price per imperial quarter (480 pounds) was 26s. 11d. The highest price was reached on July 28 (29s. 3d.) and the lowest on June 9 (25s. 3d.). The imports of wheat to Great Britain during the calendar year 1900 amounted to 68,615,990 hundredweights, against 66,636,978 hundredweights in 1899. The import of wheat from the United States shows a slight increase, while the import from Russia has increased by about 2,000,000 hundredweights. A remarkable increase is also shown in the import of wheat from Argentina to Great Britain. In 1898 it amounted to 3,983,400 hundredweights; in 1899 it increased to 11,368,600 hundredweights, while in 1900 it went up to 18,524,000 hundredweights. The total import of wheat flour into Great Britain amounted to 21,542,035 hundredweights, of which 17,871,307 hundredweights came from the United States. The world's visible supply of wheat on January, 1901, was estimated at 169,000,000 bushels, against 167,000,000 bushels on January, 1900, and 117,000,000 bushels on January, 1899. The visible supply at the beginning of 1901 is the largest since 1895, when it was estimated at 205,000,000 bushels.

WHEATON, LLOYD, General, was promoted major-general United States Volunteers in 1900, and when General Otis created the military divisions of the Philippines in April was made the commander of northern Luzon. General Wheaton, who was born in Calhoun County, Mich., in 1838, served throughout the Civil War. He enlisted in the Eighth Illinois Infantry, and, enjoying regular promotions, was commissioned lieutenant-colonel in 1864. He holds the brevet of colonel for his faithful services during the campaign against the city of Mobile and its defences, and received a medal of honor from Congress for his gallantry in leading the assault upon Fort Blakely, Ala., April 19, 1865. In September, 1866, he was commissioned captain in the regular army, and being promoted in regular order, was in 1899 appointed colonel of the Twentieth Infantry. He was then promoted brigadier-general of volunteers in the Spanish War, and was present at Havana when the American flag was first unfurled. Sailing to Manila in January, 1899, with the Twentieth United States Infantry, he has since done excellent work in several of the campaigns. In the early part of 1900, under General Bates's orders, having effectually cleared the rebels from the locality immediately south of Manila, he was given temporary command of the pacified provinces in southern Luzon.

WHEELER, JOSEPH, brigadier-general United States Volunteers, was retired in August, 1900, with the rank of brigadier-general in the regular army, having reached the age limit of 64. General Wheeler was a brilliant leader in the Confederate army during the Civil War. He was major-general of volunteers in command of the dismounted cavalry in General Kent's division during the Santiago campaign, and published *The Santiago Campaign* (1898). During 1899 General Wheeler was on service in the Philippines with the rank of brigadier-general of volunteers. On his return home from Manila in January, 1900, he visited Guam and made an interesting report to President McKinley on the condition of the island. He was given command of the Department of the Lakes, which he held until his retirement.

WHIST LEAGUE, AMERICAN, founded in 1895, had in 1899 a membership of 143 clubs. The general meeting for 1901 is to be at Niagara Falls on July 5. Secretary, C. B. Cooper, Shelbyville, Tenn.

WHITE, Sir GEORGE STEWART, G.C.V.O., since 1900 lieutenant-general in the British army, who held command of the forces in South Africa during the early part of the Boer War and gained some brilliant victories, was besieged at Ladysmith, November 2, 1899. He gallantly defended the town until he was relieved on February 28, 1900, by Sir Redvers Buller. General White now holds the position of governor of Gibraltar. See **TRANSVAAL**.

WILDE, OSCAR FINGAL O'FLAHERTIE, the English author, died November 30, 1900. He was born in Dublin in 1856, and studied at Trinity College, Dublin, and at Magdalen, Oxford, where he carried off the Newdigate prize for *Ravenna*, afterward well received by reviewers. Having removed to London in 1879, he became celebrated through the "aesthetic" fad which he started. He helped along his own advertisement by assuming eccentricities of dress. Du Maurier caricatured him in *Punch* as Postlethwaite, and Gilbert in *Patience* as Bunthorne. In 1882 he made a lecture tour through the United States, England, and France, which was fairly successful. The following year he began some serious literary work. *Poems* appeared in 1881; *The Happy Prince and Other Tales* in 1888; *Lord Arthur Saville's Crime and Other Stories* and *The House of Pomegranates* in 1891. The same year Oscar Wilde's best prose work came out, a collection of essays entitled *Intentions*. The author's somewhat wearying paradoxes are here accompanied by much thoughtful criticism. His most popular book was *The Picture of Donald Gray* (1895). Some of his dramatic attempts met with great success, although the ultra-cleverness and the epigrammatic style did not compensate for cheap cynicism and insincerity. The list includes the tragedies *Guido Ferranti* and *The Duchess of Padua*, and the comedies *Lady Windermere's Fan*, *A Woman of No Importance*, and *The Importance of Being Earnest*.

WILKINSON, HENRY SPENSER, M.A., the English journalist and critic, was born in Manchester, May 1, 1853; studied at Owens College, Manchester, and was graduated from Merton College, Oxford; and having read law, was in 1880 admitted to the bar. However, he soon turned to journalism, acting as a member of the editorial staff of the *Manchester Guardian* from 1882 to 1892. Since 1895 he has been connected with the *London Morning Post*, for which journal he is now dramatic critic. For some time he was an officer in the volunteer army, and he has written extensively on problems of national defence. His publications include *Citizen Soldiers* (1884); *Essays on the War Game* (1887); *The Command of the Sea* (1894); *The Brain of the Navy* (1895), and *Essays Toward a British Policy* (1896). His *Lessons of the War and War and Policy*, which appeared in 1900, were regarded, both in England and America, as valuable contributions to current discussion.

WILLIAMS COLLEGE, at Williamstown, Mass., founded 1793, is endowed with \$1,633,002. Statistics for the academic year 1899-1900 give a faculty of 29 and a student enrolment of 401. The total income for the year was \$114,900 and \$22,110 was received in gifts. The library of the college numbers 44,250 volumes. See **UNIVERSITIES AND COLLEGES**.

WILMER, RICHARD HOOKER, D.D., LL.D., Protestant Episcopal bishop of Alabama, died at Mobile, Ala., June 14, 1900. Born at Alexandria, Va., March 15, 1816, he was the son of Rev. Dr. William H. Wilmer, one of the most prominent of the early Episcopal clergymen of the South. The son graduated at Yale in 1836 and from the Theological Seminary of Virginia three years later. He was rector of churches chiefly in Virginia until 1862, when he was consecrated bishop of Alabama. At the close of the Civil War he recommended to the clergy of his diocese that they omit the prayer "for the President and all in civil authority" on the ground that Alabama was under military rule. For this General George H. Thomas issued an order suspending the bishop and his clergy from their functions, but President Johnson set aside the order. The bishop was the author of *The Recent Past from a Southern Standpoint* (1887) and devotional works. He received the

degree of D.D. from William and Mary College in 1850, and that of LL.D. from Cambridge University, England, in 1867, and the same from the University of Alabama in 1880.

WILSON, Rev. Dr. WILLIAM DEXTER, the dean of St. Andrew's Divinity School, Syracuse, died July 30, 1900, at the age of 84. In 1838 he graduated from the Harvard Divinity School, but three years later, becoming dissatisfied with the principles of Unitarianism, he took orders in the Episcopal Church. In 1850 he was elected professor of philosophy in Hobart College, and left there 1868 to become registrar and professor of moral philosophy at Cornell University. Of late years Dr. Wilson has been emeritus professor at Cornell and the dean of the seminary at Syracuse. His published works include *Introduction to the Study of the History of Philosophy* (1872), and his Paddock lectures on *The Foundations of Religious Belief* (1883).

WILSON, WILLIAM LYNE, an American statesman who made himself famous as the author of the Wilson Tariff bill, died October 16, 1900. He was born near Charleston, W. Va., in 1843. After graduating at Columbian University in 1860, he was pursuing further study at the University of Virginia when the Civil War broke out, and he enlisted in the Confederate Army. After the war he spent some years in the study of politics, economics, and law, but before beginning to practise at Charleston in 1871 he held a professorship in the Latin language and literature for four years at the Columbian University. In 1882, a short presidency of the West Virginia University was followed by a seat in Congress from 1883 to 1895. There he distinguished himself as an elegant and forcible speaker on the Democratic side, and as an authority on financial and tariff questions. When leader in the fight for the repeal of the Sherman Silver law he showed remarkable tact and firmness in securing a majority among the Democrats, although their sympathies were in general favorable to silver. His most important achievement came in 1894 when, as chairman of the House Committee on Ways and Means, he prepared the Wilson Tariff bill, founded on the free-trade principles which he had consistently been advancing. He vigorously supported it in the House, but opposed the amendments made by the Senate. His speeches in the silver and tariff debates were remarkable for power and eloquence of expression. In 1894 he was defeated for re-election, but President Cleveland made him postmaster-general and counted him among his most intimate advisers. Though his last years were spent apart from political activity, as president of Washington and Lee University in Lexington, Va., he frequently gave expression to opinions on national questions, being warmly opposed to the policy of expansion.

WINDWARD ISLANDS, a British colony in the West Indies consisting of the islands of St. Vincent, St. Lucia, Grenada, and the Grenadines. It has a total area of 524 square miles and a population estimated at 154,598. The colony is administered by a governor, who usually resides at St. George's, Grenada. While constituting one colony, the islands have their separate constitutions and legislatures. There is, however, a common court of appeal, established in 1850, and consisting of the supreme justices of the several islands and of Barbadoes. Agriculture is the chief occupation, and the principal products are cacao, spices, sugar, rum, cotton, and arrowroot. The sugar industry is especially well developed on the island of St. Lucia, where the central factory system is in operation. The chief articles of import are textiles and provisions. The total value of the imports and the exports of the colony for 1899 was £605,343 and £483,072 respectively. The trade is mostly with Great Britain. The revenue and expenditure for 1899 amounted to £166,472 and £150,154 respectively, and the public debt of the two islands of Grenada and St. Lucia was £314,850. There is regular steamship communication between the colony and Great Britain. The islands are also connected with Europe by a cable to St. Thomas and St. Croix. On October 29, 1900, the first agricultural school was opened with the object of furnishing education to the laboring classes of the island.

WIRELESS TELEGRAPHY. The progress made during the year in wireless telegraphy has been in the main with a view to perfecting it from a commercial standpoint. During the war in South Africa a practical test in the field was made of the Marconi system. The vertical wires, which form an important part of the apparatus, were raised by means of kites, and signals were communicated from De Aar to Orange River, a distance of some 70 miles. Before the Royal Institution of London on February 2, Marconi announced that he had improved the apparatus by the addition of a small induction coil at the receiving instrument. By this arrangement the aerial or vertical wire and the earth wire are connected with the primary of a small induction coil whose secondary is connected with the coherer and a condenser. There is consequently an increase of electromotive force at the coherer, and it will break down with a weaker oscillation, and be more sensitive to waves from a considerable distance. The improvement due to the induction coil,

which was constructed of special design, is most marked, and it has been adopted as a part of the apparatus, greatly increasing its range. Success has also crowned Marconi's efforts to bring about a sympathy of transmitting and receiving instruments, so that the latter will respond only to one set of signals. Apparatus in which this was effected was installed at two stations 30 miles apart, at Poole, in Dorset, and near St. Catherines, on the Isle of Wight. In repeated trials it was shown that each instrument will respond only to its own transmitter, and that signals may be sent simultaneously and be received and recorded on the appropriate tapes without confusion or mistake. It has also been found possible to use one and the same wire at the receiving station for several sets of instruments. In addition it has been found feasible to decrease the length of the wires, doing away with the high masts, and experiments have also been performed where signals were interchanged between two places by means of cylinders elevated 25 or 30 feet above the ground at each station. While the experiments were in progress between Poole and St. Catherines other tests were being made for the admiralty between Portsmouth and Portland. In this case the waves crossed each other, but the apparatus is so arranged that the two circuits do not conflict, and one set of signals does not interfere with the other unless it is so desired.

Professor Slaby, of the Charlottenburg (Germany) Technical High School, and Count Arco have also made improvements whereby they were able to communicate with several stations at the same time. They used two instruments, both of which were connected with a lightning conductor in the neighborhood. In one case the instrument was made to syntonize with the receiving apparatus in the Charlottenburg laboratory, while in the other the apparatus at the works of the General Electric Company at Ober Schönweide was in unison with the sending instrument. These experiments involved the transmission of signals directly through the central part of Berlin over distances of 2 and 8 miles respectively.

WISCONSIN, a Northern lake State of the United States, has an area of 56,040 square miles. The capital is Madison. Wisconsin was organized as a Territory July 3, 1836, and admitted as a State May 29, 1848.

Mineralogy.—The total shipments of ore from the port of Ashland during 1900 amounted to 2,633,687 tons. In 1899 the production of ore at Wisconsin mines was 579,798 long tons, nearly all of the red hematite variety, valued at \$837,766. The average value per ton was \$1.44. The ore was obtained chiefly from the Gogebic Range of the Lake Superior region. Quarry products for 1899 showed an advance over the yield for 1898. The values of the principal kinds of stone were: Limestone, \$826,486; granite, \$270,538, and sandstone, \$132,901; in all \$1,229,925.

Agriculture.—The following shows the production and value of the principal crops for 1900: Corn, 49,547,240 bushels, \$16,350,589; wheat, 13,166,599 bushels, \$8,426,623; oats, 61,971,552 bushels, \$14,253,457; barley, 6,259,179 bushels, \$2,754,039; rye, 3,010,437 bushels, \$1,475,114; buckwheat, 385,462 bushels, \$227,423; potatoes, 15,619,641 bushels, \$4,373,499, and hay, 1,218,354 tons, \$11,757,116. Wisconsin held third rank among the States in the production of oats, rye, and potatoes. The *Bulletin* of the National Association of Wool Manufacturers estimated the wool clip for 1900 as follows: Number of sheep, 726,040; wool, washed and unwashed, 4,719,260 pounds; wool, scoured, 2,312,437 pounds.

Industries.—In 1899 the number of cigar factories reporting was 1022, and tobacco factories, 66. The output for the calendar year was 88,967,567 cigars, 3083 pounds of plug tobacco, 474,880 pounds of fine-cut, 5,430,647 pounds of smoking, and 3533 pounds of snuff; total tobacco produced, 5,912,143 pounds. The total amount of spirits rectified for the fiscal year ending June 30, 1900, was 1,602,001 gallons; distilled spirits gauged, 7,439,898 gallons, and fermented liquors produced, 3,157,736 barrels. The creameries in the State numbered 954, and the cheese factories, 1461. Wisconsin and New York together manufactured three-quarters of the entire cheese output of the United States. Wisconsin has shared in the gradual decline of the white-pine lumber product of the Northwest. The output in 1900 was 2,106,317,000 feet, as compared with 2,964,000,000 feet in 1899. The stock on hand December 1, 1900, was 1,173,775,000 feet. Hemlock lumber showed a surprising increase in production, the amount cut being 479,571,000 feet and stock on hand 261,039,000 feet, as against 290,954,000 feet cut and 111,010,000 feet on hand in 1899. During 1900 there were 147 commercial and business failures, or thirty-eight-hundredths of 1 per cent. of the 38,724 business concerns in the State.

Commerce.—During the fiscal year ending June 30, 1900, the imports of merchandise at the port of Milwaukee aggregated in value \$910,092, and the exports, \$7475, an increase of \$285,535 in imports and of \$6148 in exports; total foreign trade, \$917,567, an increase for the year of \$291,683. Lake shipments from Milwaukee in the year 1900 included 274,676 barrels of flour, 870,514 bushels of wheat, 3,865,029 bushels of corn, 5,687,342 bushels of oats, 4,718,977 bushels of barley. Lake receipts of coal amounted to 1,538,288 tons.

Railways.—The new railway construction reported for the calendar year 1900 amounted to 86.01 miles, giving the State a total mileage of 6566.62.

Banks.—On October 31, 1900, there were 135 national banks, of which 88 were in operation, 44 in liquidation, and 3 insolvent. The active capital aggregated \$10,321,370; circulation outstanding, \$4,708,717; deposits, \$67,016,254, and reserve held, \$19,805,542. The State banks July 2, 1900, numbered 137, and had capital, \$6,417,725; deposits, \$45,929,285, and resources, \$54,719,436; and private banks, 127, with capital, \$1,136,000; deposits, \$10,431,449, and resources, \$12,257,519. One mutual savings banks had depositors, 2945; deposits, \$568,187, and resources, \$508,771. There were also 52 building and loan associations, with 13,450 members and assets aggregating \$3,582,922. Exchanges at the clearing house at Milwaukee during the year ending September 30, 1900, aggregated \$298,024,593, an increase of \$19,309,246 over the preceding year.

Finances.—The assessed valuations of property for 1899 were: Real estate, \$519,713,082; personal property, \$111,008,415; railways, \$51,390,269; total, \$682,111,766. Compared with the figures for 1898, real estate shows an increase in value of \$37,430,051, and personal property a decrease of \$6,708,354.

National Guard.—The "Wisconsin National Guard" consists of 8 staff officers, 67 cavalry, 69 artillery, and 2692 infantry. The total number of militia authorized is 3122. The State appropriations for military purposes aggregated \$100,000.

Education.—For secondary education in 1899 there were 183 public high schools, with 647 teachers and 17,548 secondary students; and 25 private secondary schools, with 168 teachers and 1419 secondary students. There were also 7 public normal schools, with 123 teachers and 2729 students in normal courses, and 2 private ones, with 15 teachers and 79 students in normal courses. Ten universities and colleges for men and for both sexes reported 233 professors and instructors, 3172 students in all departments, and a total income of \$487,514; and 1 college for women reported 16 professors and instructors, 147 preparatory and collegiate students, and a total income of \$34,501. The professional schools comprised 4 theological schools, with 28 instructors and 309 students; 2 law schools, with 12 instructors and 259 students; and 2 medical schools, with 69 instructors and 199 students.

Population.—According to the United States census the population in 1890 was 1,686,880; in 1900, 2,069,042; increase for the decade, 382,162, or 22.7 per cent. The five largest cities, with population in 1900, are: Milwaukee, 285,315; Superior, 31,091; Racine, 29,102; La Crosse, 28,895, and Oshkosh, 28,284.

Direct Primaries.—A movement has been started in Wisconsin for the nomination of all important elective officers by primary election, instead of by caucuses and conventions. The Republican party, which initiated this reform, held a primary in 1900 for the nomination of governor, which resulted in making the Hon. Robert M. La Follette the nominee of his party. It was expected that in case of Republican victory at the polls in November, the following plank in the Republican State platform would be made the object of legislation: "The great reformation effected in our general elections through the Australian ballot inspired us with confidence to apply the same method in making nominations, so that every voter may exercise his sovereign right of choice by direct vote without the intervention or interference of any political agency. We, therefore, demand that caucuses and conventions for the nominations of candidates for office be abolished by legislative enactment, and that all candidates for State, legislative, congressional, and county offices be nominated at primary election upon the same day, by direct vote, under the Australian ballot."

Elections.—The State election of 1900 resulted in the election of La Follette (Rep.) for governor, who received 264,420 votes. Bohmrich, the Democratic nominee, received 160,774 votes. Thus, the Republican plurality was 103,745.

In the ten Republican representatives to the 56th Congress there was but one change made for the 57th Congress. In the ninth district Alexander Stewart (Rep.) was succeeded by Webster E. Brown (Rep.).

In the State Legislature of 1900 there were 31 Republicans and 2 Democrats in the Senate and 80 Republicans and 20 Democrats in the House. In the Legislature of 1901 there will be 31 Republicans and 2 Democrats in the Senate and 83 Republicans and 17 Democrats in the House.

In the national election McKinley received 265,866 votes, and Bryan received 159,285 votes. In 1896 McKinley received 268,135 votes, and Bryan received 165,523. Thus, McKinley's plurality increased from 102,612 in 1896 to 106,581 in 1900.

State Officers and National Representatives.—State officers for 1900: Executive—governor, Edward Scofield; lieutenant-governor, Jesse Stone; secretary of state, W. H. Froehlich; treasurer, J. O. Davidson; attorney-general, E. R. Hicks; superintendent of education, L. D. Harvey; insurance commissioner, E. Giljohan; railroad commissioner, Graham L. Rice—all Republicans.

Supreme Court: Chief justice, J. B. Cassoday (Rep.); associate justices, J. B.

Winslow (Dem.), C. V. Bardeen (Rep.), J. E. Dodge (Dem.), and Roujet D. Marshall (Rep.); clerk, Clarence Kellogg.

State officers for 1901: Same as for 1900, except Robert La Follette succeeds Scofield as governor.

Supreme Court: Same as for 1900.

Congressional representatives for 1900 (56th Congress): H. A. Cooper (Racine), Herman B. Dahle (Mount Horeb), Joseph W. Babcock (Necedah), Theobald Otjen (Milwaukee), Samuel S. Barney (West Bend), James H. Davidson (Oshkosh), John J. Esch (La Crosse), Edward S. Minor (Sturgeon Bay), Alexander Stewart (Wausau), and John J. Jenkins (Chippewa Falls)—all Republicans.

Congressional representatives for 1901 (57th Congress): Same as for 1900, except that Webster F. Brown (Rhineland) replaces Alexander Stewart.

Senators for 1900 (56th Congress): John C. Spooner (until 1903), from Madison, and Joseph V. Quarles (until 1905), from Milwaukee—both Republicans.

Senators for 1901 (57th Congress): Same as for 1900.

WISCONSIN, UNIVERSITY OF, Madison, Wis., organized 1848. The occupancy of the great library building erected on the lower campus, the construction of the new building for the college of engineering at a cost of \$100,000, and the enlargement of University Hall are the most important features of the year in the way of material improvements. The new library building was erected for the State Historical Society, and houses the university collection as well as those of the Wisconsin Academy of Sciences and the Wisconsin Geological and Natural History Survey, offering noteworthy additional facilities for research and study. About \$50,000 was spent during the year on additions to buildings used by the college of agriculture. Important internal changes during the biennial term 1898-1900 include the complete organization of the college of engineering and the appointment of Professor J. B. Johnson, formerly of Washington University, as dean; an enlargement of the summer school, which was made a summer session of the university; the organization of a school of commerce within the college of letters and science, and the division of the school of economics, political science, and history so as to form a separate school of history. The regents have had under consideration plans for incorporating with the university a medical branch or college located in the city of Milwaukee and also for founding a department for the promotion of the important subject of forestry, an art especially applicable to Wisconsin. Sufficient funds are as yet lacking for the execution of both these plans. Another matter affecting the university was the change in the method by which the State provides the revenue of the university. The income was changed from a tax of a fraction of a mill to an annual appropriation of an amount equivalent to that formerly raised by the millage tax. This change places the university in a position where the income will not increase as the valuation of State property advances and as the number of students increases with the advance of population. The total instructing staff was 147; and the number of students, excluding duplicated names, but including 341 in the summer session and 36 in the library school, was 2422, distributed as follows: College of letters and science, 1096; mechanics and engineering, 327; agriculture, 381; law, 231; pharmacy, 51; music, 193. See **UNIVERSITIES AND COLLEGES**.

WISE, ISAAC MAYER, a prominent Jewish rabbi, died in Cincinnati, O., March 26, 1900. He was for many years the recognized leader in the movement for a united and progressive Judaism. Born March 20, 1819, at Steingrub, Bohemia. In 1843 he became rabbi of a small congregation at Radnitz. He soon gave expression to what were then considered opinions of a revolutionary character in both religion and politics. Becoming convinced that he could be of greater usefulness in a land of less trammelled speech, he came to the United States in 1846. His first congregation was at Albany, N. Y., where the strictly orthodox and unprogressive element took so unkindly to his efforts for liberality and reform that he withdrew and organized a reform congregation. In 1854 he became rabbi of the Bene Yeshurun congregation in Cincinnati, and in the same year founded *The Israelite*, a periodical whose name was later changed to *The American Israelite*, and in 1855 he established *Die Deborah*, published in German. He remained the editor of these magazines and of the *Chicago Israelite*, which he subsequently established, to the time of his death. The rabbi aimed at the establishment of a college where young men could be prepared for the Jewish pulpit, and after repeated attempts the college—Hebrew Union College, Cincinnati—was founded in 1875, and later, through his efforts, a synod—the Central Conference of American Rabbis, which meets annually—was organized in 1889. Rabbi Wise becoming president of both organizations. He was the author of several ambitious theological works. In 1854 appeared the *History of the Israelitish Nation*, which was severely criticised by both Jews and Christians, but which is said to be the first rational account of Judaism in English. Among his other writings are: *Judaism, its Doctrines and Duties*; *Origin of Christianity*; *Judaism and Christianity: Their Agreements and Disagreements*; *The Martyrdom of Jesus of*

Nazareth; The Cosmic God; The History of the Hebrews' Second Commonwealth; A Defence of Judaism Versus Proselytizing Christianity; Pronaos to Holy Writ.

WOLCOTT, ROGER, former governor of Massachusetts, died December 21, 1900. He was born in Boston in 1847, being a great-grandson of Oliver Wolcott, a signer of the Declaration of Independence. A graduate of Harvard College and of its law school, he began public life in 1877 with his election to the Common Council of Boston. During 1882-85 he was a member of the Massachusetts House of Representatives. In 1893 he was elected lieutenant-governor and served until 1896. That same year, on the death of Governor Greenhalge, he became acting governor, and was chosen to the office at the two succeeding elections. He was the first president of the Massachusetts Republican Club, and a prominent figure in the social life of Boston.

WOMAN'S COLLEGE OF BALTIMORE, a leading woman's college at Baltimore, Md., was founded by the Methodist Episcopal Church and opened in 1888. During the academic year 1899-1900 the faculty numbered 30 and the student body 319. The college library contains 7600 volumes. The income for the college year for educational purposes was \$65,583, and about \$59,000 was received in gifts. Twelve hundred thousand dollars has been invested in property and endowments. The college grants the degrees A.B. and A.M.

WOMAN SUFFRAGE ASSOCIATION, NATIONAL AMERICAN, organized in 1868. It seeks to organize public sentiment in favor of woman suffrage in all the States of the Union. General meeting for 1901 to be held in Minneapolis, Minn. President, Mrs. Carrie Chapman Catt; secretary, Mrs. Rachel Foster Avery, 4069 Powelton Ave., Philadelphia.

WOMEN'S CHRISTIAN TEMPERANCE UNION, NATIONAL, organized November, 1874, had in 1900 a membership of 300,000. It claims to be the largest society ever composed exclusively of women, and is organized in every State and Territory. Its work progresses along six great lines: (1) Organization; (2) preventive; (3) education; (4) evangelistic; (5) social; (6) legal. These embrace thirty-eight well-organized departments. Some 200,000 children are being taught in what are called the Loyal Temperance Legions. Through the efforts of the Union all but two States now require instruction in the nature and effects of alcohol to be given in the public schools in connection with the study of physiology. The society has been a factor in State and national legislation along many reform lines. It has been instrumental in raising the age of consent in nearly every State. During 1900 it led in efforts to prevent the seating of Mr. Roberts, the polygamist, in Congress, and in securing the anti-canteen law for the army. The enforcement of law has been an important part of its work. Total abstinence for the individual and prohibition for the State are basic principles. The society publishes the *Union Signal* and the *Young Crusader*. Annual meeting for 1901, Fort Worth, Tex., in November. President, Mrs. Lillian M. N. Stevens; secretary, Mrs. Susanna M. D. Fry, Rest Cottage, Evanston, Ill. Headquarters, Rest Cottage, Evanston, Ill.

WOODGATE, Sir EDWARD ROBERT PREVOST, K.C.M.G., C.B., major-general in the British army, died near the Mooi River, Natal, in March, 1900, from a wound received in the action at Spion Kop on January 24. Born November 1, 1845, he was educated at Radley and Sandhurst, and in 1865 joined the Fourth King's Own (now the Royal Lancaster) Regiment, with which in 1868 he served in the Abyssinian expedition. He participated in the Ashanti war of 1873-74, and was present at the capture of Kumassi. In 1878 he was sent to South Africa on special service and took a distinguished part in the Zulu War of 1879. In April, 1898, Colonel Woodgate was sent to Sierra Leone to organize the new West African regiment, which was soon employed in quelling native disorders. The Ashanti climate forced Woodgate to return to England in 1899. For his services he was made a K.C.M.G. When the Fifth Division, under General Sir Charles Warren, was formed upon the outbreak of the Anglo-Boer War he was placed in command of the Eleventh, or Lancashire, Brigade, reached Durban in December, crossed the Tugela with General Warren on the 16th of January, and on the night of the 23d occupied Spion Kop. Here on the following day, Woodgate, now a general, received a mortal wound.

WOOL AND WOOLLEN MANUFACTURE. The year 1900 has been a year of depression in the wool trade. The enormous stock of 352,247,389 pounds was carried over to 1901, against 157,398,879 pounds carried over from 1899 to 1900, according to the *American Wool and Cotton Reporter*. It is stated that the use of wool has been greatly restricted on account of the high price, more shoddy and cotton being used. The practice of weighting worsted is also increasing, the goods being soaked in mineral salts, such as sulphates of alum, lead, zinc, and magnesium, which increases their weight 15 per cent. The National Association of Wool Manufacturers reports the total wool product for the year 1900 as 288,636,621 pounds, and the

world's production as 2,685,105,013 pounds. The number of sheep at the beginning of the year was 41,883,065, which, reckoned at an average value of \$2.93, makes a total value of \$122,665,913. One less woollen mill, or 48 in all, was constructed in 1900 than in 1899. The following table, taken from the *Textile World*, shows the exports and imports of raw wool, shoddy and yarn for the last ten years:

Year ending June 30.	RAW WOOL.				SHODDY IMPORTS.		YARN IMPORTS.	
	Exports.		Imports.					
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
1891.....	291,000	\$394,000	129,303,648	\$182,400,000	1,200,000	\$420,000	2,000,000	\$1,120,000
1892.....	202,000	306,000	148,760,652	196,900,000	300,000	90,000	1,300,000	750,000
1893.....	91,000	148,000	172,435,838	210,600,000	100,000	110,000	1,200,000	690,000
1894.....	520,000	906,000	55,152,558	61,100,000	14,100,000	50,000	500,000	390,000
1895.....	4,289,000	4,844,000	206,033,906	229,900,000	18,700,000	1,980,000	2,400,000	1,700,000
1896.....	6,945,000	8,550,000	230,911,473	315,000,000	49,900,000	2,650,000	2,000,000	1,050,000
1897.....	5,270,000	6,199,000	350,852,026	567,500,000	8,300,000	6,030,000	1,800,000	990,000
1898.....	121,000	180,000	184,795,302	167,800,000	300,000	690,000	330,000	190,000
1899.....	1,603,000	2,372,000	76,736,300	83,300,000	400,000	770,000	209,000	116,000
1900.....	2,200,000	3,872,000	145,918,455	202,600,000	400,000	90,000	200,000	130,000

WOOLLEY, JOHN GRANVILLE, was nominated for the presidency of the United States by the Prohibition National Convention at Chicago, in June, 1900. Mr. Woolley has been well known as a lecturer since 1888. He was born at Collinsville, O., February 15, 1850, graduated from Ohio Wesleyan University in 1871, and in 1885 was admitted to the bar of the United States Supreme Court. He practised his profession in Minneapolis, Minn., and in New York. In 1896 he declined the presidential nomination of the Prohibition party. He is the author of *The Sower; Civilization by Faith*, and *The Christian Citizen* (1898), and the editor of *The Chicago Lever*.

WUHU. See CHINESE EMPIRE (paragraph Cities of China).

WU TING FANG, the Chinese minister to the United States, was born near Canton about fifty years ago. He was educated at Canton and at Hong Kong, where his father was a merchant. The circumstances of his early life made him feel the importance of a knowledge of the English language and of English law. He therefore went to England in 1874, where he studied law, and was made a barrister at the Inner Temple, London. On his journey home in 1877 Mr. Wu first visited the United States. The following five years he practised law with success at Hong Kong, and for many years was one of the secretaries of Li Hung Chang. He was for a term secretary of the Chinese Legation in Tokio, Japan, and also secretary of the peace commission to Japan. The skill which he had opportunity to show in the subsequent diplomatic negotiations between the two countries resulted in his appointment in May, 1897, to his present position of envoy extraordinary and minister plenipotentiary to the United States, Spain, Mexico, and Peru. By his suavity and cordiality Minister Wu immediately won a popularity at Washington which served him well during the difficulties of the summer of 1900. During the days of excitement over the fate of the legations at Peking Minister Wu firmly believed in their safety. He succeeded in sending a message to the American minister at Peking. Mr. Conger (*q.v.*) and in receiving a reply when no one could obtain tidings from that city. Minister Wu uses the English language fluently. He has lectured and written on various subjects, including Confucianism and America's trade with China.

WYOMING, a northwestern State of the United States, has an area of 97,890 square miles. The capital is Cheyenne. Wyoming became a State on July 10, 1890.

Mineralogy.—The rank of third place among the coal States west of the Mississippi gained by Wyoming in 1898, was maintained in 1899, when the total product was 3,837,392 short tons, valued at \$4,742,525. This output was nearly 1,000,000 tons greater than in the preceding year, and was about three times as large as it was ten years before. The quarry products in 1899 were sandstone, granite, and limestone, with a total valuation of \$36,025. The petroleum yield amounted to 5560 barrels, valued at \$38,920. The estimated production of gold in 1900 was 1200 fine ounces; value, \$24,806.

Agriculture.—The following shows the production and value of the principal crops for 1900: Corn, 81,702 bushels, \$49,021; wheat, 366,414 bushels, \$278,475; oats, 630,272 bushels, \$296,228; potatoes, 388,179 bushels, \$263,962, and hay, 493,446 tons, \$3,602,156. The number and assessed value of farm animals in 1900 was as follows: Horses, 85,609, \$1,433,751; mules and asses, 1133, \$47,563; cattle, 359,069, \$6,154,640;

swine, 3190, \$13,129, and sheep, 2,624,689, \$5,426,493. According to an estimate published in the *Bulletin* of the National Association of Wool Manufacturers, Wyoming held second rank among the States in the production of wool in 1900. The estimate placed the yield at 21,549,231 pounds of washed and unwashed wool, and 7,111,246 pounds of scoured wool. According to the State Board of Sheep Commissioners, the sheep on September 1, 1900, numbered 3,254,366, and lambs, 1,855,131; total, 5,109,497, valued at \$14,668,904, giving to Wyoming first place in the aggregate value of sheep.

Railways.—The new railway construction reported for the calendar year 1900 amounted to 145.96 miles, giving the State a total mileage of 1370.22. The total assessed valuation of railway property in 1900 was \$7,353,980, an increase of \$19,375 in a year.

Banks.—On October 31, 1900, there were 18 national banks organized within the State, of which 14 were in operation, 2 in liquidation, and 2 insolvent. The active capital aggregated \$885,000; circulation outstanding, \$379,215; deposits, \$3,982,547, and reserve held, \$1,243,821. The State banks, June 29, 1900, numbered 9, and had capital, \$122,000; deposits, \$627,381, and resources, \$820,173; and private banks, 11, with capital, \$176,868; deposits, \$1,090,905, and resources, \$1,321,635.

Finances.—The balance in the State treasury, September 30, 1898, was \$90,884; receipts for the year 1898-99, \$292,148; receipts for the year 1899-1900, \$372,167; total receipts plus balance, \$764,199; disbursements for 1898-99, \$288,004; disbursements for 1899-1900, \$284,552; balance, September 30, 1900, \$191,643. The total bonded indebtedness of the State on October 1, 1900, was \$320,000, all drawing interest at the rate of 6 per cent. The total assessed valuation of property in 1900 was \$37,892,304, a gain over 1899 of \$2,313,497. The State tax levy for 1900 was six mills—a reduction of $\frac{1}{4}$ mill from the levy of 1899.

Insurance.—The following statement gives comparative statistics of insurance in the State for 1898 and 1899:

Kind of Insurance.	Year.	Risks Written.	Premium Received.	Losses Paid.	Losses Incurred.
Fire	1898	\$6,069,391	\$117,758	\$27,989	\$26,646
Fire	1899	6,547,493	125,429	39,647	45,818
Life	1898	791,363	135,940	17,240	.....
Life	1899	1,474,527	170,064	77,468	.....
Accident and Miscellaneous.....	1898	1,226,117	10,323	3,201	3,223
Accident and Miscellaneous.....	1899	1,652,306	14,074	4,505	4,505

Education.—For secondary education in 1899, there were 6 public high schools, with 13 teachers and 269 secondary students, and 2 private secondary schools, with 8 teachers and 73 secondary students. One college for both sexes reported 14 professors and instructors, 140 students in all departments, and a total income of \$49,219. No normal or professional school was reported.

Population.—According to the United States census, the population in 1890 was 60,705; in 1900, 92,531; increase for the decade, 31,826.

Proposed Constitutional Amendment.—A proposed constitutional amendment was rejected at the elections held in November. If carried, this amendment would have permitted counties in the States to refund their indebtedness outstanding on January 1, 1899, irrespective of whether a part of this indebtedness was in excess of that permitted by the constitution.

Elections.—In 1898, at the State elections, the Republican candidate, Richards, received 10,383 votes and Alger, the Democratic candidate, received 8989 votes. Thus the Republican plurality was 1394. There was no change in 1900 in the congressional representative at large. The State Legislature in 1900 consisted, in the Senate, of 13 Republicans and 5 Democrats, and in the House of 38 Republicans. In 1901 the Legislature will consist of 18 Republicans and 1 Democrat in the Senate, and of 35 Republicans and 2 Democrats in the House.

In the national election McKinley received 14,482 votes and Bryan received 10,164 votes. In 1896 McKinley received 10,072, and Bryan, 10,655. Thus Bryan's plurality of 583 in 1896 was lost and McKinley's plurality was 4219 in 1900.

State Officers and National Representatives.—State officers for 1900: Executive—governor, De Forest Richards; secretary of state, F. Chatterton; treasurer, G. E. Abbott; auditor, Leroy Grant; adjutant-general, J. A. Van Orsdel; superintendent of education, T. T. Tynan—all Republicans.

Supreme Court: Chief justice, C. N. Potter (Rep.); associate justices, Samuel T. Corn (Dem.), Jesse Knight (Rep.); clerk, R. C. Morris.

State officers for 1901: Executive—same as for 1900, except that Frank A. Stitzer replaces J. A. Van Orsdel as adjutant-general.

Supreme Court: Same as for 1900.

Congressional representative for 1900 (56th Congress) : Frank W. Mondell (Rep.), from Newcastle.

Congressional representative for 1901 (57th Congress) : Same as for 1900.

Senators for 1900 (56th Congress) : Francis E. Warren (until 1901), from Cheyenne, and Clarence D. Clark (until 1905), from Evanston—both Republicans.

Senators for 1901 (57th Congress) : Clarence D. Clark (until 1905), from Evanston; one vacancy.

YACHTING. The chief interest in yachting circles in 1900 was centred in the four 70-footers built on similar designs by the Herreshoffs. These yachts were the *Mineola*, owned by August Belmont; the *Rainbow*, Cornelius Vanderbilt; the *Yankee*, Harry Payne Whitney and Herman B. Duryea, and the *Virginia*, W. K. Vanderbilt, Jr. Among the many races arranged for these yachts was a series of ten held by the Newport Yacht Racing Association for a \$1000 cup and a contest over the Sandy Hook course for a \$2500 cup, presented by Sir Thomas Lipton. The *Mineola* won 13 firsts out of the 28 races sailed between two or more of the four during the season; the *Rainbow* won 8 out of 27 races, including the Lipton Cup; the *Yankee* won 6 out of 21, and the *Virginia*, 1 out of 20. At the close of the season the owner of *Rainbow* was informed in a private letter from Mr. Duryea, who had managed the *Yankee*, that he had violated the rules by putting on extra ballast without a remeasurement. Mr. Vanderbilt thereupon informed the various committees of his oversight, and declined all the cups won by the *Rainbow*, which were in turn refused by those yachts which would have won them on default. In the class of 51-footers some interesting sport was furnished by the arrival from England of the fast *Astrild* and *Isolde*. A special series of races was arranged for 30-footers, lasting all summer, which were won by *Wawa*; second, *Dorothy*; third, *Esperanza*; fourth, *Vaquero III*. An interesting series of races in the class of 21-foot raceabouts closed with a meeting between the champions *Scamp* and *Jolly Roger*, which was won by the last named. Sir Thomas Lipton again challenged for the America's Cup for 1901, and two yachts are being built to defend it, one for the New York Y. C. by Herreshoff and one unofficially by Crowninshield, of Boston. The cup races will begin August 20. The international contest with Canada for the Seawanhaka Cup was sailed August 3-7, and won in three straight races by the *Red Coat*, Royal Canadian Y. C., over the *Minnesota*, White Bear Y. C. The White Bear and Rochester yacht clubs challenged for the cup for 1901, but a challenge from the Sailing Club, of England, was accepted instead, so that there will be two British yachts competing in American waters in 1901. The interlake trophy was won by the *Genesee*, Rochester Y. C., over the *Minota*, Royal Canadian Y. C. The schooner *Endymion*, George Lord Day, made a transatlantic record run of 3200 knots in 13 days 20 hours during July. The New York Y. C. took possession of a new city clubhouse in December, which is considered to be the finest of its kind in the world.

YALE UNIVERSITY. One of the most notable matters of legislation at Yale during the college year 1899-1900 was the reorganization of the course of study in the academic, or college, department. The work of the senior year has been made entirely elective. The rules regarding the junior year remain unchanged, but in sophomore year a sufficient range of choice is allowed to enable the student to make his course during that year the basis for the study of some special line during the succeeding years. The effect of this innovation is most conspicuous in mathematics, in the natural sciences, and in history. The change thus effected is significant, since it denotes the final acceptance by the most conservative of our American universities of the principles of the elective system in the Arts courses. "This change was necessary," writes the president of the university in his annual report, "in order that the graduate of Yale College might stand on the same level in beginning his professional studies which is attained by the graduates of other first-rate colleges at the present day." The total gifts received or pledged at the close of the college year for the bicentennial funds amounted to \$1,090,000, and a large amount was received besides in special gifts. Of these, the most important was one of \$150,000 from the Pinchot family for the endowment of the Yale Forest School, which is the second school of its kind to be founded in the United States. This new department will be under the direction of Henry S. Graves of the United States Division of Forestry, and its demonstration areas will include forest lands in the estate of Mr. J. W. Pinchot, near Milford, Penn., and lands in the Adirondacks belonging to Mr. William Rockefeller and to the International Paper Company. A special course has been instituted in the Sheffield Scientific School for students who may afterward study forestry, and an independent course of study in sanitary engineering. W. A. Rogers, '74, gave \$5000 for a scholarship in biology and chemistry in the Sheffield School, and a fellowship of \$10,000 was given to the college in memory of Theodore Cuyler, '82. Several important lectureships were established. William E. Dodge,

of New York, gave \$30,000 for the endowment of a course on The Responsibilities of Citizenship, to be given in an annual series by a lecturer of distinguished attainments. Rutherford Trowbridge, as a memorial of his father, gave \$5000 to provide public lectures in the art school, and the university has appropriated an equal amount for similar lectures in the musical school. Mrs. Isaac H. Bromley, in memory of her husband, gave \$5000 for a course on journalism, literature, or public affairs. The musical department has arranged to assume the management of the New Haven Symphony Orchestra. Among building plans and operations may be noted the completion of the law school building; the purchase of a block of land next to the hospital by the medical department; the erection of a memorial gateway by the class of '97; plans for a dormitory, to be called Fayerweather Hall and to be completed in the summer of 1901; the new administration building, to be finished at the same time; and the yet unpublished plans for the bicentennial buildings. About \$200,000 was received during the year in addition to gifts already mentioned—\$100,000 from the estate of Cornelius Vanderbilt, about \$50,000 from the estate of Charles J. Stille, \$30,000 from the estate of Professor O. C. Marsh, and \$15,000 from the estate of Catherine W. Jorman. The Peabody Museum has been much enriched by the collections of Professor Marsh. The library, whose average annual growth is about 13,000 volumes, received during the eighteen months ending with the year 1899-1900 about 21,530 volumes and 16,250 pamphlets, of which 9500 volumes and the pamphlets were gifts. The most important gifts were Professor Marsh's library of 5000 volumes and over 2000 volumes from the library of Professor James D. Dana.

October 20-23, 1901, will be the two hundredth anniversary of the granting of a charter to Yale College. There will be addresses by distinguished alumni and representatives of European and American institutions of learning, and the new dining hall and administration building will be dedicated. A series of important monographs will be published, and there will be exhibitions of educational and other material connected with the university. See UNIVERSITIES AND COLLEGES.

YAMAGATA, ARITOMO, Marquis, who was premier of Japan from November, 1898, until his resignation in September, 1900, was born in 1838. He took an active part in the overthrowing of the old autocratic authority toward the middle of the century, and in recognition of his services was appointed second vice-minister of war under the new *régime*. In 1869 he was sent to Russia and France for the purpose of studying their military institutions. In 1877 he showed exceptional ability in the Satsuma rebellion, and in the following year was given command of the imperial guard and placed at the head of the general staff. He was prime minister from 1889 until 1891, when he was appointed minister of justice. During the war with China he proved himself an able strategist, and after having expelled the Chinese from Corea, he was created marquis in 1895. Yamagata's policy has consistently been the adoption of Western ideas; his interests have been directed toward the organization of the Japanese army, which through his energy has become one of the most efficient of the world. As prime minister he has still further strengthened the army and navy with an eye to a possible war with Russia. He was succeeded as premier by the Marquis Ito (*q.v.*).

YELLOW FEVER. The controversy between the disciples of Professor J. Sanarelli, of Bologna and Montevideo, and the opponents of his theory has continued during 1900. In 1895 he announced the discovery of the *bacillus icteroides* and claimed that it was the pathogenic organism of yellow fever. This bacillus is found in the blood and tissues of persons sick with or dead of the disease, but not in the gastro-intestinal tract. It is always associated with other microbes (*bacillus coli icteroides* and *bacillus coli concentricus*, Fitzpatrick), and its presence is very transitory. It is anærobic; and mould, warmth, moisture, and absence of ventilation—conditions found on shipboard—stimulate its growth. It dies in water at a temperature of 65° Centigrade. It flourishes in sea-water. Its toxin is extremely active, producing in most domestic animals the same lesion as the bacilli themselves. Sanarelli reports having inoculated 5 persons with a bouillon culture of the *bacillus icteroides*, producing typical yellow fever with all its symptoms and anatomical conditions. Among those who have confirmed Sanarelli in this country are the members of the commission of the United States Marine Hospital Service, Drs. Eugene Wasdin and H. D. Geddings, who prepared a report in 1899. Proust and Wurtz have lately compiled the opinions of those who confirm Sanarelli. Wasdin gives the following figures, percentages of isolations of *bacillus icteroides* from persons ill with yellow fever by the investigators named: Geddings and Wasdin, 92.8; P. E. Archinard, 85; Potier, 82.6; Sanarelli, 55; Lutz, of São Paulo, 50; Agramonte, 33.3 per cent. The *bacillus x* of Sternberg is a distinct micro-organism from the *bacillus icteroides*, and probably belongs to the colon group.

Yellow fever was epidemic in Brazil, Cuba, and Mexico during the whole of the

year 1900. In August two cases were reported at Tampa, Fla. In the same month a case appeared in the port of New York City in the person of a passenger from Havana on the Spanish steamer *Montserrat*. In October a saloon passenger on the Ward Line steamer *Havana* was quarantined at New York City because of yellow fever. In August, Cuba's quota of yellow-fever victims began to increase in Pinar del Rio and in Havana, the number in the latter city growing from 35 to 59. Most of these patients were non-immune Spaniards and immigrants from the Canary Islands. Early in September 204 cases and 34 deaths were reported for the first 26 days of August, the total number of deaths from the fever in the month being 49. At the end of September a hundred cases of the fever were under treatment in Havana. During September 257 cases were treated with a mortality of 25 per cent. Comparisons with the preceding two years should be made only when it is borne in mind that in August, 1898, the blockade stopped all immigration, and that immigration in 1899 began only in September. There was no case of yellow fever in Santiago during 1900. In Senegal, West Africa, the mortality of those attacked by yellow fever reached 86 per cent., and 15 per cent. of the population perished. The negroes were immune. See SERUM-THERAPY and VITAL STATISTICS.

YOUNG, SAMUEL BALDWIN MARKS, brigadier-general United States Army, has been in active service in the Philippines during the past two years. General Young was born in Pennsylvania in 1840, and entered the Union Army as private in the Twelfth Pennsylvania Volunteers in 1861. Afterward commissioned captain in the Fourth Pennsylvania Cavalry, he was appointed major in 1862, lieutenant-colonel in 1864, and for his gallant services in the final campaign against Lee in 1865 was brevetted brigadier-general. Entering the regular army in 1866 as second lieutenant, he was promoted in regular course, and was made colonel of the Third Cavalry in 1897. During the Spanish War General Young was appointed brigadier-general of volunteers and then major-general. He then served in the Philippines and received the commission of brigadier-general in 1900. In the spring of that year General Young inflicted a heavy defeat upon the insurgent forces in northern Luzon. In July he installed a municipal government at Vigan in this same district and was kept busy during the summer by various uprisings.

YOUNG MEN'S CHRISTIAN ASSOCIATION. The first Young Men's Christian Association was organized in London in 1844 by Sir George Williams, then a merchant's clerk, "for the spiritual improvement of the young men in the drapery trade." The first societies in North America were organized at Montreal and Boston in December, 1851. The semicentennial of this event is to be celebrated in Boston, June 11-16, 1901. The associations now exist on every continent, numbering in all 6192, with a membership of 521,077, and owning 640 buildings, valued at \$26,322,010. The North American group numbers 1439 associations, with 255,472 members, 359 buildings, valued at \$20,378,480. In the British Empire there are 1410 associations, with 116,316 members and 148 buildings, valued at \$3,974,960. The North American associations report nearly 80,000 men using physical means, 26,000 different studies in educational classes, and an average daily attendance at their rooms of 81,000. In this group the general departments are City and Town, Railroad, Student, Army and Navy, Colored Men and Indians; there is also a Foreign Department, including work in India, Ceylon, China, Japan, and Brazil. The North American work is supervised by an international committee with headquarters at No. 3 West Twenty-ninth Street, New York. L. C. Warner, chairman; R. C. Morse, general secretary. This committee is aided by thirty-five State and provincial organizations. These agencies with the local associations employ 1500 paid secretaries.

YOUNG PEOPLE'S CHRISTIAN UNION (OF THE UNITED BRETHREN IN CHRIST), organized in 1890, has a membership of 80,000. Publishes *The Watchword*, edited by Rev. H. F. Shupe, A.M. Rev. J. P. Landis, D.D., Ph.D., has been president since the organization of the union in 1890. General secretary, Rev. C. W. Brewbaker, Ph.M., S.T.D., Canton, O.

YOUNG WOMEN'S CHRISTIAN ASSOCIATION OF THE CITY OF NEW YORK, founded 1870, has its main building at 7 East Fifteenth Street, New York City. Other branches of the association's work are carried on in the Margaret Louisa Home, on Sixteenth Street, the West Side Settlement, 458 West Forty-fourth Street, and the Seaside Home, at Asbury Park, N. J. The membership in 1900 was 1429. President, Mrs. Clarence E. Beebe; corresponding secretary, Miss J. F. Bangs, 29 East Forty-fourth Street, New York City. The International Board of Women's and Young Women's Christian Associations in the United States and Canada, incorporated in 1899, will hold its sixteenth biennial conference at Cleveland, O., in 1901. The board publishes the *International Messenger*.

ZANZIBAR, a British protectorate, consists of two islands, Zanzibar and Pemba, lying off the coast of German East Africa, the estimated area and population of the one being 625 square miles and 150,000 respectively, and of the other 360 square

miles and 50,000. The dominions of the Sultan of Zanzibar, which formerly included a large amount of territory on the mainland of Africa, have gradually been restricted to their present area. British protection was extended to the islands in 1890, and in the following year a regular government was formed under the sultan, who in turn is under a British consul-general. The sultan since 1896 has been Hamoud bin Mahomed bin Said. No new measures can be taken or new expenditures incurred without the consent of the consul-general, to whom the public accounts are always open to inspection. The population of the country includes a considerable number of foreigners, probably seven or eight thousand. Most of the inhabitants are Mohammedans, but there are still many heathen. Christian missions are conducted under the auspices of the Anglican, Independent, Wesleyan, and Roman Catholic churches. The revenue, which is stated to be about \$600,000 a year and about equal to the expenditure, is chiefly derived from customs, taxes on produce (particularly cloves), rents on government property, port dues, and the post-office. The sultan's private revenue amounts to about 120,000 rupees (\$39,000) annually. The principal items of expenditure are public works, harbor improvements, and police. There is no public debt.

The leading exports of Zanzibar include cloves, ivory, copra, cocoa-nuts, shells, gum-copal, hides, and goat skins. The principal import is cotton goods. Statistics of the total imports and exports and of the trade with the United States are as follows:

	Total Imports.	Total Exports.	Imports from United States.	Exports to United States.
1897.....	\$6,807,914	\$5,788,924	\$273,825	\$222,800
1898.....	7,566,971	7,287,700	394,995	285,460
1899.....	7,983,032	7,567,033	505,069	422,318

Foreign trade in 1898 was chiefly with the following countries: German East Africa, British India, British East Africa, Great Britain, France, America, Germany. Zanzibar, and particularly the island of Pemba, together produce about four-fifths of the world's clove supply. Nevertheless, on account of the difficulty in obtaining laborers, the clove plantations are not being worked to their full capacity. The clove output has been as follows: 1890, 17,845,170 pounds; 1895, 18,824,995 pounds; 1898, 12,909,750 pounds; 1899, 19,971,000 pounds. The value of the clove export in the last-named year was upward of \$1,050,000. The ivory export amounted to \$636,561, the amount sent to the United States being valued at \$265,969. In 1898 the shipping entered, exclusive of the coasting trade, amounted to 286,209 tons, carried in 183 vessels. The port of Zanzibar, with an estimated population of 30,000, is the largest and commercially the most important city on the east coast of Africa, being a trading centre and entrepôt for a very large area of the adjacent mainland. Commerce is in the hands of British India merchants, who are said to number about 7000. Although by a decree of the sultan in April, 1897, slavery ceased to have a legal status, enforced servitude, it is reported, still exists to a great extent, while the attainment of freedom by many slaves, most of whom when not compelled will work only enough to provide themselves with actual necessities, has occasioned a large amount of labor difficulty in the protectorate.

ZEPPELIN AIR SHIP. See AERIAL NAVIGATION.

ZINC. The production of zinc in the United States in 1899 was 119,408 short tons, valued at \$13,731,920, while that for 1900 is estimated at 122,850 short tons. During 1900 there has been great excitement in the zinc regions of southwestern Missouri, and many old deposits, as well as new ones, have been most actively worked. In addition to work at these mines, there has been much activity in the Leadville district of Colorado. The treatment of ores from this region has been tried from time to time at Missouri smelters, but seemingly without success, owing to the more complex nature of the Western material. The new market which has been found for them is partly in Illinois and partly in Europe, many of the Belgian works having drawn largely upon this source of supply. The general European demand for American zinc ores is increasing, and in 1900 the total exports were about 37,920 tons. As a result of the recent successful use of natural gas as a fuel in certain smelters in Kansas, situated near the gas wells, a number of smelters formerly situated in Missouri and parts of Kansas, not provided with natural gas, were forced to close, as they could not compete with the plants more favorably located. At La Salle, Ill., where the smelting works were of great size and provided with excellent organization and equipment, an attempt was made to compete for a while, at least, with those smelters which used natural gas, but it was found necessary to make changes in the plants and substitute coal-gas for coal as a fuel. The price of zinc ore has fluctuated considerably during the year 1900, starting

at \$36.50 per ton and falling to \$25 per ton at the beginning of June, and subsequently rising to nearly \$28 at the end of the year.

ZIONIST CONGRESS. See JEWS.

ZOOGEOGRAPHY. See BIOLOGY (paragraph Geographical Distribution).

ZOOLOGICAL LITERATURE. *Systematic Works.*—Most of the literature of systematic zoology is found in periodicals, especially reports of museums, academies, and societies, and during the past year there has been a very marked increase in this class of literature. Whereas, in 1899 about 4000 species of animals were described as new to science, in 1900 there were fully 6000 such descriptions published, an increase of nearly 50 per cent. About two-thirds of the whole number were insects (see ENTOMOLOGY) and a quarter of the remainder belong to other groups of arthropods. About two-fifths of the remaining 1500 were worms and other invertebrates of still lower groups. Molluscs, mammals, and birds furnished each about one-fourth of the remainder, while fishes, reptiles, and amphibians practically complete the list, the number of new echinoderms being insignificant. The most marked increase has been among the vertebrates, the number of new species being nearly doubled in that group. There are only two books dealing with systematic zoology which need mention in this connection. One of these is the third volume of Dr. G. O. Sars's important work on the *Crustacea of Norway*, dealing with the *Aimacea*. The other is a handsomely illustrated volume of 350 pages by Mr. W. L. Sclater, treating of the *Fauna of South Africa: Mammals, Vol. I., Primates, Carnivora, and Ungulates*. It is a first-class, thoroughly up-to-date volume, sufficiently technical for the working naturalist, but sufficiently popular and interesting to make good reading.

Popular Books.—Of popular books on zoology, excepting ornithology (*q.v.*), there has been a surprising lack, the only one which seems to deserve mention being Mr. Beddard's *Book on Whales*, a well-illustrated volume of 320 pages. It is number seven in Putnam's Science Series, and the letter press and illustrations are admirable. The book includes the form and anatomy of the group in general, and then deals with the various sub-orders and families in detail, with anecdotes and accounts of their natural history.

Text-Books.—Of the year's output of text-books, there are half a dozen well worth mentioning, two of which are published in America. Because of its striking departure from the conventional arrangement of a text-book, the *Introduction to Zoology*, by Professor and Mrs. C. B. Davenport, deserves first place. It is a much-needed and very welcome effort to introduce natural history into secondary schools instead of the technical morphology which is so much in vogue just now. Although the book may not be beyond criticism in all particulars, yet it is easily the best of the kind that has yet appeared. The other American book is by Professor Le Conte, of the University of California, and is called *Outlines of the Comparative Physiology and Morphology of Animals*. It is a well-prepared volume of 500 pages, dealing with the organs of animals in relation to their function, using man as the type. It thus differs very markedly in its arrangement from most zoological text-books. Turning now to England, we find there three new works: An *Elementary Course of Practical Zoology*, by Professors T. J. and W. N. Parker, a volume of over 600 pages, arranged on the familiar plan of "types"; An *Introduction to the Study of the Comparative Anatomy of Animals*, by G. C. Bourne, M.A., F.L.S., the first volume of which has appeared, dealing with general principles, protozoa, and coelenterates; it is written in a very attractive style, but does not seem to be essentially different from other text-books on comparative anatomy, and a *Text-Book of Zoology Treated from a Biological Standpoint*, by O. Schmeil, edited by Professor J. T. Cunningham, Part I., *Mammals*; not carefully written, and by no means equal to the preceding works. In Germany the fifth edition of Dr. Richard Hertwig's *Lehrbuch der Zoologie* has appeared, having been revised and brought up to date.

Special Treatises.—In this class may be grouped publications regarding the collections of zoological expeditions, the fauna of special districts, and monographs on particular species or groups of animals. Their name is legion, and we can simply mention here some of the more important. Of the zoological results of scientific expeditions, we have to record additional parts published during the year of the *Zoological Results* of Dr. Willey's trip to New Guinea and the East Indies; some twenty parts of *Papers from the Harriman Expedition to Alaska in 1899*; a volume by Dr. Nansen on the *Norwegian North Polar Expedition, 1893-96*; *Scientific Results* (see ORNITHOLOGY) and two more parts of the *Zoology of the Norwegian North Atlantic Expedition*, dealing with the foraminifera and the hydroids. Among important monographs may be mentioned one by Mr. E. R. Sykes on the *Land Shell Fauna of the Hawaiian Islands*; a magnificent work by Professor C. C. Nutting, of Iowa University, on *The Plumulariæ*, the first one of his reports on American hydroids, and the *Memoirs of the Liverpool Marine Biological Committee on Cardium and Echinus*, both very commendable pieces of work. Two

volumes well worthy of notice are Parts II. and III. of Professor Lankester's *Treatise on Zoology*, which are virtually monographs on the *Parifera* and *Cælenterrates*, by Messrs. Minchin Fowler and Bourne, and on *Echinoderms*, by Messrs. Bather, Gregory, and Goodrich. These books are attractively written and finely printed, but opinions differ as to their scientific value, English reviewers praising highly, while foreign students find considerable to criticise. Another volume of a very different sort is Mr. Stephen Paget's *Experiments on Animals*, a volume devoted to the defence of vivisection and the promotion of experimental research on animals. A very notable publication is the third part of Dr. Oppel's Comparative Histology of Vertebrates, *Lehrbuch der Vergleichenden Mikroskopischen Anatomie der Wirbelthiere*, a volume of 1200 pages and nearly 700 illustrations, devoted wholly to the mouth, tongue, pancreas, and liver. A somewhat similar volume is Dr. Carl Rabl's *Ueber den Bau und die Entwicklung der Linse*, which is a very complete account of the crystalline lens of the eyes of vertebrates. Of the many papers on special biological phenomena, we will mention only one, a very interesting and valuable paper by Messrs. Gamble and Keeble on *Color Changes in the Prawn*. The curious changes in color in this animal are clearly shown in the beautiful colored plates with which the paper is illustrated.

General Treatises.—There have been a number of books published by zoologists during the past year which deal more or less directly with this subject, though not wholly confined to it. Several of these are accounts of scientific expeditions in which zoology came in for a large share of attention. Chief among the books of this sort is *A Monograph of Christmas Island* (Indian Ocean), by C. W. Andrews, the zoologist who lived on the island for ten months. It is an admirably written account of a unique and valuable investigation, the results of which are here published by the trustees of the British Museum. A somewhat similar work is the *Report on the Conjoint Expedition to Socotra*, edited by Dr. H. O. Forbes, and to which many specialists have contributed. The narrative of the cruise of the *Valdivia*, by Dr. Carl Chim, has appeared under the title *Aus den Tiefen des Weltmeeres*, and is a most interesting account of an important and successful expedition. Turning now to an entirely different class of works, those dealing with the fundamental problems of biology, we may mention the fact that Professor E. B. Wilson's notable book, *The Cell in Development and Inheritance*, has been entirely revised, and a second edition has appeared during the year. Another already famous book which has been thoroughly revised and appeared in a second edition during the year is Dr. Karl Pearson's *Grammar of Science*, which, though hardly zoological, demands mention here, because of its defence of the *biological* as against the *exact* sciences. Because of the fact that their author is one of the greatest living zoologists, the *Studies, Scientific, and Social*, of Dr. Alfred Russell Wallace deserve a brief reference. They appear in two volumes of essays, many of which treat of zoological subjects. *Die Mutations Theorie*, Part I., by Professor Der Vries, of Amsterdam, is an interesting discussion of evolution, in which the author holds that new species arise as the result of "sports" or discontinuous variation. Perhaps the most noteworthy book of the year in this field of philosophical biology is Professor J. T. Cunningham's *Sexual Dimorphism in the Animal Kingdom: A Theory of the Evolution of Secondary Sexual Characters*. This volume contains an elaborate and well-reasoned explanation of the origin of secondary sexual characters from the point of view of a Neo-Lamarckian. The author believes the theories of natural selection and sexual selection as suggested by Darwin to be inadequate to explain the phenomena with which he is dealing, and proposes to account for them by the inherited effect of mechanical stimulation, limited to the sex in which it occurs. The book is sure to excite much interest, and will probably arouse no little discussion.

For other zoological literature, see ENTOMOLOGY and ORNITHOLOGY.

ZOOLOGICAL SOCIETIES. As in 1899, so in 1900 most of the meetings of zoologists have been in connection with larger organizations, as the various Associations for the Advancement of Science or the unions with botanists in Societies of Naturalists. The biennial meeting of the *Australasian Association* was held at Melbourne in January, with Mr. R. L. J. Ellery, late government astronomer, in the chair. The section of biology was addressed by its chairman, Mr. J. J. Fletcher, on the subject *The Rise and Early Progress of Our Knowledge of the Australian Fauna*. A committee was appointed to draw up a catalogue of recent Australian and Tasmanian marine shells. The next meeting is to be in Hobart in 1902. The various continental organizations have passed a rather ordinary year, though the meetings have been well attended and some valuable papers have been read. The *Berlin Academy* celebrated in March its bi-centennial, which was opened with a reception to the members by the emperor. The seventy-second *Congress of German Scientists and Physicians* met in September at Aix-la-Chapelle. The congress was divided into 38 sections, more than half of which were purely medical. About 2000 scientists attended. Dr. G. Hertwig, of Berlin, delivered one of the principal

addresses, taking as his subject the *Evolution of Biology*. He thinks Darwin's theories as to natural selection still rest on the uncertain base of hypothesis, but that his teachings as to evolution are well founded. The British zoologists have had a very good year. They were well represented at the conversazione of the *Royal Society* on May 8 and again on June 20. The most important of their exhibits were specimens from the reefs of Funafuti, enlarged models of mosquitoes and human blood corpuscles infected with the malaria parasite (see ENTOMOLOGY); two living female crowned Emus, each with a young one; an aquatic "walking-stick" (insect) with eggs, and a collection of living marine worms from Plymouth. (For the meeting of the British Association, see below.)

In America, besides participating in the meetings of the American Association and Society of Naturalists (see below), zoologists have been in evidence at the meetings of the National Academy, the New York Academy, and the American Microscopical Society. At the meeting of the National Academy of Science in Washington in April, the zoological papers presented dealt with the anatomy of the nautilus, West Indian madrapose coral-polyps, the cruise of the *Albatross* (see ZOOLOGICAL STATIONS, paragraph Expeditions), and the zoogeography of Africa; at the meeting in Providence in November, the principal zoological papers dealt with Cephalopod mollusks and questions of evolution. At the annual reception of the New York Academy of Sciences in April, zoology was represented by a series of photographs illustrating the progress made at the New York Zoological Garden, many preparations of an anatomical and embryological character, and a series of beautifully mounted heads of venomous and non-venomous snakes. At the meeting of the American Microscopical Society, held in New York City in June, seven of the papers read were zoological, and dealt with questions of embryology, cave fauna, limnology, etc. Professor C. H. Eigenmann, the well-known zoologist, was elected president.

British Association for the Advancement of Science.—The annual meeting of this organization was held at Bradford early in September, with Sir William Turner as president. The attendance was very large, not only from Great Britain, but from almost all the civilized portions of the globe. The zoological section was combined with the physiological, and was presided over by Dr. R. H. Traquair, whose address dealt with the relation between paleontology and zoology, illustrated especially from the class of fishes. Six committees reported to this section, as follows: Bird migration in Great Britain and Ireland, investigations at the Naples Zoological Station, investigations at the Plymouth Marine Laboratory, on the Index Animalium, the plankton of the Channel, and zoology of the Sandwich Islands. Twenty-one papers on zoology were presented to this section, besides a number on physiology. It is remarkable that a third of the papers dealt with insects and five with fishes, while only one referred to birds. The most important papers were those by Professor W. D. Scott, of Princeton (U. S. A.), on the *Miocene Fauna of Patagonia*; by Dr. Gregg Wilson on the Duck-bill (*Ornithorhynchus*), illustrated by specimens of the eggs and embryos; by Professor L. C. Miall, on the *Respiratory Organs of Aquatic Insects*; by Professor R. Burckhardt, on the *Lamargida* (sharks), and on *Nestling Kagus*, a rare flightless bird of New Caledonia; by Mr. N. Annandale, on *Malay Insects*; and on *Mimicry* by Professor E. B. Poulton.

American Association for the Advancement of Science.—The meeting of this association took place in New York City the last week in June, and was a great success. Two of the committees which reported dealt with zoological subjects—namely, the *Quantitative Study of Variation* and *The Investigation of the Blind Vertebrate Fauna of North America*. A grant of \$100 was made for the work of the former committee, which is carrying on a series of investigations on a fresh-water mollusk, *Io*; and \$50 was voted for continuing the work on blind vertebrates, in charge of Professor Eigenmann. The number of papers presented before the section of zoology was unusually large—38—but they represented the work of only 24 authors. The address of the chairman, Professor C. B. Davenport, was postponed until next year, so that hereafter the retiring chairman may give the address. Of the papers presented, 8 dealt with questions of anatomy, 7 with variation, 7 with phylogeny, 6 with embryology, 5 with distribution, 2 with physiology, 2 were systematic and 1 was historical. Nearly two-thirds of the papers dealt with vertebrates, while considerably less than one-third treated of invertebrates. It is a difficult matter to select the most important papers from such a list, but a few may be mentioned which were specially interesting. Professor Eigenmann's paper on the *Fauna of the Caves of Texas*, which gave a list of 21 species of animals that had been collected by him in a few days' visit to some caves near San Marcos; Professor Osborn's papers on the origin of birds and mammals; Professor Hargitt's papers on Hydromedusæ, and Dr. Gill's paper on African fishes. The next meeting of the association will be held in Denver in August of 1901.

American Society of Naturalists—American Morphological Society.—The Ameri-

can Society of Naturalists, with its various affiliated societies, met in Baltimore, December 27-29, while at the same time the *Naturalists of the Central States* were meeting in Chicago. At the Baltimore meeting the principal features were the address of the retiring president, Professor E. B. Wilson, delivered at the banquet, and the discussion of the subject *The Attitude of the States Toward Scientific Investigation*, by five prominent scientists, of whom three were zoologists. About 35 papers were read before the Morphological Society, but many were hastily given, and some at least gave evidence of having been hastily prepared. The most noteworthy were those of Professor E. B. Wilson on *Chemical Parthenogenesis*, in which he dealt with the morphological phenomena involved in this process in sea-urchins' eggs, and with the phenomena of fertilization and cleavage in etherized eggs. Professor G. H. Parker's paper on *The Crossing of the Optic Nerves in Teleosts* was admirably clear and very interesting, and Mr. C. B. Wilson's paper on the *Habits and Life History of Argulus* was full of curious facts, clearly stated and of much economic importance. Other papers worthy of mention were those on variations in *Medusa* and in land shells of Tahiti by Mr. A. G. Mayer, and on variation in the shells of *Purpura* by Dr. R. P. Bigelow and H. S. Conant. Many of the papers were very technical and of little general interest. At the meeting in Chicago about 40 naturalists were present, and more than 30 papers were presented. Of those pertaining to zoology, the one which attracted the most general interest was Professor Loeb's (*q.v.*) account of his work in procuring *Artificial Parthenogenesis* in eggs of sea-urchins and other marine animals. (See BIOLOGY.) Professor Donaldson's demonstration of the absorption and excretion of water by the skin in live frogs was very interesting, as was his account of changes in the weight of the central nervous system of frogs at different seasons of the year. The demonstration with a projection microscope by Dr. H. S. Jennings of the chemotaxis of *Paramecium* was one of the most attractive features of the meeting. There was a general discussion of State Natural History Surveys, in which the survey of Minnesota came in for a large amount of praise. Next year the American Society of Naturalists will meet at Chicago, so that there will be no separate meeting of the Naturalists of the Central States. (See ORNITHOLOGY.)

ZOOLOGICAL STATIONS. The progress of zoology during 1900 as exemplified in the various zoological stations has not been unusually remarkable, for although these stations have enjoyed a successful year, there has been no notable increase in their number or in the work done under their auspices. Rather fewer expeditions of importance to the zoologist have occurred during the year than in 1899, so that even these "moving stations," if such a term be permissible, have contributed little to the general progress of the science.

Foreign Stations.—Of all zoological stations, that at Naples is the most famous, for it is, doubtless, the best equipped station in the world. More than forty persons are employed there in collecting and caring for marine animals and providing for the needs of the naturalists at work in the laboratory. Nearly 1200 investigators have worked at this station since it was opened in 1873, and it has been the great meeting ground for zoologists of all nations. Recently the laboratory has been enlarged, and during the past year it has enjoyed a very prosperous season, much of the work that has been done there relating to experimental embryology and comparative physiology. The station at Plymouth, England, of the Marine Biological Association has enjoyed another successful year, the biological survey of the Channel being continued under the direction of Mr. Garstang. The station of the Liverpool Association at Port Erin, on the Isle of Man, has also had a good season, as shown in the series of little monographs on *Ascidia*, *Echinus*, and *Codium* which have appeared, designed for the use of students. An interesting station established during the past year is that among the extinct volcanoes of the Auvergne, where it is intended to carry on investigations on the fauna and flora of the numerous lakes of that vicinity, some of which are of great depth and cover a considerable area. Work already done seems to show traces of the survival of a marine fauna in that district.

American Inland Stations.—The Fish Commission laboratory at Put-in-Bay, O., was not opened this year, but the biological survey of the Great Lakes was carried on by a different method—namely, by individual workers and small parties working independently. A camping party spent the summer making collections of the fauna of Lake Erie at different points, and these are now in the hands of specialists. Work on the plankton has been carried on, as in previous summers, by Professors Reighard and Ward. In Illinois, Professor Forbes has had a laboratory, carrying on investigations on the plankton of the Illinois River at Havana and Meredosia, and he has also made a systematic study of the fishes of the State, to be published with colored figures of each species. In Indiana the State University continued its work at Winona Lake, the investigation being mostly on the plankton. In New York the State Museum had an entomological station at Saranac Inn, where research work on aquatic insects was carried on. In Minnesota investigations have been

carried on by means of the house-boat *Megalops* on the fauna of the Mississippi and Minnesota rivers from Mankato to the southern border of the State. In Ohio the State University has had a station at Sandusky Bay, where extensive marshes, river, forest, beach, and lake afford excellent collecting grounds. Regular courses of instruction were offered by the teachers from the university, but the laboratory was also open without charge to properly qualified investigators.

American Marine Stations.—The principal marine stations in America are those at Woods Hole, Mass., Cold Spring Harbor, L. I., and Beaufort, N. C., on the Atlantic coast, and Pacific Grove, Cal., on the Pacific. At Woods Hole the summer was a profitable and pleasant one, though nothing of especial note occurred. The presence of the *Fish Hawk* and *Grampus* made the collecting very satisfactory, and the two fish traps maintained by the United States Fish Commission supplied an abundance of material for the many workers on fishes and their parasites. The laboratories were well filled with investigators throughout the summer, and nearly every group of marine animals had, at least, one devotee. As usual, the untiring patience and unflagging interest of Dr. Bumpus, the director of the Fish Commission Station, added inestimably to the pleasure of the workers and the value of the work. The passage of the bill by Congress appropriating \$12,500 for the erection and equipment of a laboratory on the coast of North Carolina has attracted renewed attention to Beaufort, where it will probably be built. The Fish Commission opened a laboratory there in 1899, and during the past summer it has enjoyed a second very successful season under the admirable direction of Professor H. V. Wilson. Investigators from Johns Hopkins, Columbia, and North Carolina universities and Trinity College (N. C.) and several assistants in the service of the commission carried on work on the systematic zoology and ecology of sponges, echinoderms, and actinians, the development of ophiurans, actinians, and gephyreans, and experimental work in regeneration and egg-segmentation. Of directly economic importance was the work on the oysters and oyster beds, the breeding and foods of certain food fishes, the life history of blennies and of a barnacle parasitic in the gill-chambers of the edible crab. At Cold Spring Harbor, as at Woods Hole, there is a summer school of biology as well as a laboratory for investigators under the direction of Professor C. B. Davenport, of Chicago. As might be expected from the well-known work of the director, many of the investigations have been devoted to the study of statistical variation in some form or other. Variations in beetles, mollusks, crustaceans, and mice were the subject of more or less elaborate and extensive investigations. Other lines of work were the systematic study of trematode worms and the embryology of the interesting crustacean *squilla*. The season at Pacific Grove was a good one, some very good collecting being done, adding much to our knowledge of the invertebrate fauna of the Pacific coast. At the Bay of Avalon, Cal., a novel experiment was tried in the use of a diver to collect zoological specimens. The work was done in about four fathoms of water, and proved very successful, especially for mollusks and echinoderms, which have no means of escape. For delicate forms also the diver is far better than a dredge, not only because of the less rough treatment, but because it is not necessary to take the animals from the water at all, as they can be transferred to jars while still under water. Another great advantage of a diver is that he can work on bottom that is so covered with coarse seaweed and boulders that a dredge could not be used. And this advantage would be still more important in the warmer seas, among massive corals, which make trawling or dredging impossible, but within and around which is an almost inconceivable wealth of animal life.

Expeditions.—The principal noteworthy events under this head are the return from their recent cruises of the *Siboga* and *Albatross*. The *Siboga* is a cruiser of the royal navy of Holland, and has spent a year in scientific exploration of the ocean and ocean bottom among the East India Islands, especially about Celebes. She was admirably equipped for her work, and besides important hydrographical and geographical discoveries, she has brought back extensive botanical and zoological collections. Among the latter are numerous interesting sponges, some curious bryozoa, remarkable corals, an "absolutely flat" actinian, numerous echinoderms, especially some interesting star-fish material, many noteworthy mollusks, especially solenogastres and cephalopods, and some curious and interesting deep-sea fishes. The *Albatross* at the beginning of the year was among the Gilbert Islands, but reached Jaluit in the Marshalls on January 9; from there she passed westward through the Carolines, thence northward to Guam and thence to Yokohama, where she arrived early in March. Although in many respects her voyage was a great success, and resulted in many interesting and important discoveries, it was a disappointment zoologically, Professor Agassiz reporting that the weather prevented much of the dredging and trawling that had been planned, and in some places, where the weather permitted the work, the collecting was very meagre. After refitting at Yokohama the *Albatross* spent more than three months in dredging and

trawling off the east coast of Japan, and made some extensive collections of the fauna of that district. From there she went to the Aleutian Islands and Alaska, where she was engaged in investigations connected with the salmon fisheries, which continued through the summer. See also FISH AND FISHERIES and ZOOLOGICAL LITERATURE.

ZULULAND; a province of the British colony of Natal (*q.v.*), was formally annexed to the latter on December 31, 1897. It includes Amatongaland and extends about 210 miles along the Indian Ocean from the Tugela River to Lourenço Marques. The estimated area is 12,500 square miles and the population about 181,000, of whom only some 1100 are whites. The province is represented by one member in the legislative council and one in the legislative assembly of Natal. Various minerals occur, but they have not been exploited.

PROGRESS OF THE CENTURY

ASTRONOMY.—At the close of the 18th century observational astronomy was the observational astronomy of the elder Herschel. The examination of the heavenly bodies, the delineation of their appearance, form and markings, the fixing of their positions, numbers and motions with a certain degree of precision,—all these things had been done. The mechanism of the universe had been studied by the great English and French mathematicians, and the problems of motion within the solar system were practically solved. At that time astronomy was already a "perfect science"; but the word perfection meant a very different thing from what it means to-day.

The century just closed has been marked especially by three things of import to the science; first, the extraordinary development of instrumental appliances; second, the "new astronomy" of the spectroscope; third, the introduction of elaborate methods of international co-operation.

Telescopes of the largest size and observatories of the first rank have multiplied greatly, especially in America. Whereas, in the last century, and even in the earlier half of the present one, there was no instrument of real power in the western hemisphere, it is to America that we must now look for the giant telescopes of the world. The Observatory of Harvard College, the Lick Observatory in California, the Yerkes Observatory in Chicago and the United States Naval Observatory at Washington, are among the world's principal astronomical establishments. The largest refracting telescope in existence is mounted in the Yerkes Observatory, and the second in size at the Lick Observatory. With these increased powers astronomers of the 19th century have been able to push our knowledge of the minuter details of celestial science far beyond the most extreme limits imposed upon their predecessors of the preceding hundred years. In addition to this increase of telescopic power, there has also been a great advance in the development of apparatus for extremely exact measurements on the sky.

The Heliometer is an instrument essentially of the 19th century. First perfected by Fraunhofer, this instrument, in the hands of Bessel, won from the depths of space the first measurement of the distance of any star from our earth. This achievement fixes for all time the correctness of the Copernican theory of the universe.

Astro-Photography.—The century has also seen the introduction of what is certainly the most prolific method of astronomical observation ever invented,—the photography of the sky. Processes of astronomical photography were first perfected about 1850-1860, perhaps principally by Rutherford of New York; and in the hands of that man of genius, and of many skillful successors, this art has opened to us deep-hidden secrets of the heavens as if by magic. Distant stellar systems, to the telescope's eye invisible, have been brought down within our view. We can photograph that which we cannot see even with our most powerful instruments because we can accumulate the faintest glimmer of light by a lengthened exposure of the photographic plate until it becomes strong enough to give visible results.

The astronomy of the spectroscope has made available to us an entirely new kind of information. With that instrument, Fraunhofer and others have been able to study the chemical structure of our sun, and even to extend the inquiry so as to include a determination of the materials composing the distant stars. We now know that the sun contains only the same chemical elements that are found in the earth; and thus has been forged a strong link in the chain of evidence that fixes a community of origin upon all the members of the solar system. This science of solar physics saw its beginning in the spectroscopic researches about the middle of the century; what its end will be remains to be told by future generations of men.

The spectroscope has furthermore made possible a kind of observation that was entirely unknown to the older instruments of astronomy, no matter how large or how accurate. Those older instruments can measure only the angles or *directions* in which we see the heavenly bodies; for a knowledge of their mutual distances, we are compelled to depend upon calculations based on measures of direction, and Newton's law of gravitation. But with the spectroscope it has become possible to determine observationally the velocity in miles per second with which a celestial object may be approaching our earth or receding from it; and what is most wonderful of all, we can make these measures entirely irrespective of how far away the body under observation may be. The most distant star within our limit of vision upon the outer confines of space can be examined, to ascertain whether it is coming towards us or leaving us.

The tendency to scientific co-operation on a large scale has been very marked during this century. Indeed, just prior to its beginning, a number of astronomers on the continent of Europe had banded themselves together into an association whose object was to hunt down, and discover, if possible, an unknown planet which it was thought might be found somewhere between Mars and Jupiter. There were certain peculiarities in the known distances of the successive planets from the sun which made it appear as if there was a gap in that part of space. Careful search, therefore, might lead to brilliant success. It is a remarkable fact that the very first night of the new century, the night of January 1, 1801, was rendered famous by just the discovery that these astronomers had made the goal of their search. On that night Piazzi of Palermo found the little planet Ceres. In those days astronomical information travelled slowly, and it was some months before the other astronomers of Europe were informed of his discovery. In the meantime, Piazzi himself had been able to make but very few observations, and the planet had moved into a position so near the sun that it was no longer possible to observe it. Astronomers were, therefore, fearful lest it might be lost again as soon as found. No mathematical methods were known to the science of that day which could predict the future orbit from observations extending over a few weeks only. The older planets had been observed for generations, and the methods used for calculating their orbits were not applicable to the brief period during which Ceres had been observed by Piazzi. But a man was found for the emergency; a young mathematician then almost unknown took up Piazzi's observations, devised a new method of calculating orbits, and predicted the future path of the planet in time for its reobservation as soon as it had moved far enough away from the sun to be seen. That mathematician was Gauss. His orbit method is the *Theoria Motus Corporum Cælestium*, and this the 19th century will leave to future generations as one of science's most precious heirlooms.

Several other effective coöperative plans have marked the century. About 1860, a large number of observatories began to make a great catalogue of all the stars in the sky; this is now almost finished, and in very recent years the observatories have again joined together to make another and still greater catalogue, to contain at least two million stars, for which the observations are to be obtained by the new photographic method.

The important problem of *determining the sun's distance* is another difficulty that has yielded in a measure to the coöperative efforts of astronomers in the last quarter of the century; and it is to be hoped that this problem will be set definitely at rest before many years of the coming century have elapsed, now that we have available for observation the new and favorably situated planet Eros. It is interesting to note that while the first observing night of the century gave us Ceres, earliest of the minor planets, almost the last discovery of the same century was the 433rd planetoid, Eros, of all the heavenly bodies our very nearest neighbor in space.

Discovery of Neptune.—It has been known for many years that Uranus, which was supposed to be the outermost planet, did not pursue exactly the orbit which had been mapped out for it by astronomers. There were slight but persistent perturbations, so small that they but trembled, as it were, on the verge of visibility, but yet large enough to set some of the keenest intellects among men to work upon their explanation. In the year 1846 Leverrier, a French mathematician, announced in a letter to Galle, at the Observatory of Berlin, that if he would turn his telescope on a certain night to a definite point of the sky, he would there see a planet whose light had never yet fallen upon the eye of man. Leverrier made this prediction confidently on the strength of mathematical calculations based on the perturbations in the motion of Uranus. Galle looked, saw the planet; and the 19th century in that moment was placed at the head of all the centuries in the annals of astronomy.

BIOLOGY.—At the beginning of the 19th century general biology, in contrast to Zoology and Botany, had no recognized existence. Indeed the word biology was first used (by Lamarck and by Treviranus) in 1802. The title of Treviranus's book was *Biology: or the Philosophy of living Nature*, and the broader treatment of organic problems remains still the special field of Biology. About 1800, the doctrine of evolution was much discussed. Buffon, Erasmus Darwin, Lamarck, and St Hilaire, at this time or somewhat earlier, favored this doctrine. But the doctrine was not rooted in a deep soil of fact, so it withered before the brilliant criticism and supreme authority of the great anatomist Cuvier (1830) and remained dormant until a generation had arisen that knew not Cuvier and which gladly accepted the fact-founded theory of evolution presented by Darwin (1858). The general acceptance by scholars of the evolution doctrine is rightly considered the event of the century of supreme importance for the biological sciences as well as for philosophy. Before, phenomena were regarded as static; thenceforth, they became dynamic.

The factors of evolution were early recognized to be two—variation and heredity. The science of variation developed slowly until the last decade of the century when a proper method was gained. This method was a quantitative measure of individual variation first brought into common scientific use under the stimulus of Galton and extended and refined by Pearson, in England. Already many new data have been gathered concerning the laws of individual variation. Our notions of heredity have become sharply defined through the identification of the cell, and especially the cell nucleus, as the bearer of hereditary qualities (Hertwig and others), and by the recognition of the fact that heredity depends upon a continuity of an ancestral germ-plasm. A method has recently been gained for precisely measuring the results of heredity (Galton, Pearson), and Galton has discovered a simple mathematical law of normal inheritance. The last quarter of the century is notable for the discussion of the possibility of inheriting the characters acquired by the individual. Darwin believed in such inheritance but the possibility of it was boldly challenged by Weismann and the burden of proof has been thrown on the upholders of the doctrine.

Of the two biological sub-sciences morphology and physiology, the development of the former has especially characterized the century, particularly along the lines of comparative anatomy, embryology, and histology, including cytology. This trend of the century seems to have been given by Cuvier. He founded comparative anatomy and deduced great anatomical principles which gave a dignity to the science and excited an interest in it which had previously been lacking. Cuvier had many intellectual children, among the most famous of whom were Owen of England, Louis Agassiz of Switzerland and later of America, and Bronn of Germany. This school was dominated by such partial truths as the idea of unity of the organism such that a small piece will represent the whole; and the idea of a strict homology of organs within the sub-kingdoms: Huxley in England and Gegenbaur in Germany broke away from the Cuvierian influence and made comparative anatomy less speculative and more genetic. Also the growth of embryology afforded a method of checking conclusions of comparative anatomy.

Embryology had its beginnings in the eighteenth century, but the data contributed up to the nineteenth were meagre. The German Von Baer (1792-1876) laid the foundations of comparative embryology. Rathke, Kölliker, Lovén, Sars, Johannes Müller, Kowalevsky, Metschnikoff, Alexander Agassiz, and others, early supplied the materials for a grand superstructure of observation and reflection which Balfour put together, in 1880-1881, with marvellous skill. Among the general theories connected with embryology, two had especial influence in shaping the direction of investigations. One was the germ-layer theory, according to which the embryonic body is composed of three layers—ectoderm, entoderm, and mesoderm—which were regarded as homologous in all groups of animals and gave rise to the same organs in all. Although a useful guiding theory it has proven untenable in detail. The second theory was a revival (by Roux and Weismann) of one that had been held in the preceding century in a cruder form, according to which the characters of the embryo are predetermined in the egg. The controversy over this theory led to the introduction of experimentation into embryology (by Driesch, Roux, Hertwig, Wilson, Morgan, and others) with the result that a sort of middle ground has been gained between the theory that form is predetermined in the egg and that it is wholly undetermined there.

Histology and Cytology.—The science of histology and the century were born at the same time, for the work of Bichat, *Traite des membranes* (1800-1802) contains the first general recognition of the composition of the organs of the body out of a few elementary tissues and is the first attempt to show that the function of an organ is due to the properties of its constituent tissues. But the further analysis of tissues was not possible until the idea that the tissues were composed of cells had

gained ground. This step was hastened by the works of Schleiden (1838) and Schwann (1839) who moreover discovered that the embryo arises from a single cell or ovum. Then the cell doctrine was formulated according to which the whole organism is built up of cells; every organism is developed out of a single cell; and the activities of a multicellular organism are the sum of the activities of its constituent cells. The cell doctrine has proved immensely valuable in the development of the science of tissues; in physiology; and especially in embryology. Next to this doctrine the chief advances in histology have been made through the improvement of the compound microscope, of the microtome and of staining reagents, especially those coloring matters which attack specific tissues. The contributions of cytology to physiology date from the discovery, in the forties, that the essential, vital, part of the cell is its constantly moving "protoplasm." The systematic study of the physiology of protoplasm, begun by Kühne, 1864, was pursued with vigor only towards the end of the century; while on the other hand, the physiology of the separate tissues of the vertebrate body early became one of the best studied branches of biological science. But it is in relation to embryology that cytology has come to be of greatest importance. The idea that the egg is a cell gained ground slowly in the forties; that the sperm is a cell was not recognized until 1865; and the conclusion followed that the fertilization of the egg is the union of two cells. But it was not until 1884 that the union of two cell-nuclei became recognized as the most important part of the process. In the last two decades of the century the mechanics of fertilization and cell-division were analyzed with ardor and success.

Spontaneous Generation of Life.—Another controversy, for the renewal and settlement of which the century will always be famous, was revived closely upon the acceptance of the evolution doctrine—the question of the spontaneous generation of living matter out of non-living. Experiments, while refuting the theory of abiogenesis, did much to extend our knowledge of bacteria, and led to modern antiseptic methods. Finally may be mentioned the progress of our knowledge of the distribution of organisms. The centers of all continents have now been penetrated, the waters of the seas have been strained and the bottoms of the oceans scraped to obtain a complete idea of the existing organisms. Here we call to mind the great voyage of the Challenger and those of Alexander Agassiz in the Blake and the Albatross. Numerous biological stations have been started on the sea-shore for the study of marine organisms.—The greatest is that of Dohrn at Naples, founded in 1872, while the earliest in America was that of Louis Agassiz at Penakese in 1873. The important biological stations of the world now number at least a score.

Contrasting the end of the century with the beginning there is now in Biology no overshadowing authority in any branch of the science; the lines of work are immensely diversified and especial weight is now given to genetic, experimental and quantitative methods in research.

CHEMISTRY.—In order as briefly as possible to indicate the advances of this science, which during the century, has grown from an infant to a sturdy giant, we shall first consider some of the fundamental discoveries of chemical laws.

Chemical Laws and Theories.—The first important advance (published in 1807) was the application of the theory of atoms to chemical compounds by John Dalton, who claimed that the relative atomic weights of the elements are the proportions by weight in which the elements combined. This was followed soon after (1808) by Gay-Lussac's important discovery that the weights of the combining volumes of the gaseous elements bear a simple ratio to their atomic weights. Later (1811) came the publication by Avogadro of the law, according to which equal volumes of all substances in the gaseous state, contain, under the same conditions of pressure and temperature, equal numbers of molecules. These three fundamental conceptions form the basis of the present views of molecular composition. The atomic theory received further support by Dulong and Petit's experiments (1819), which showed that equal numbers of atoms have equal capacities for heat. The valuable announcement of Mitscherlich of the law of isomorphism, in 1819, followed by the method of determination of vapor densities devised by Dumas in 1827, were of the utmost importance. From that time on the various advances that have been made in this special branch have all tended to confirm the original theories of Dalton and Avogadro, and especially is this the case with the kinetic theory of gases devised by Joule and Lord Kelvin. The work of Sir Humphrey Davy early in the century led to the development of the idea that every substance was composed chemically of two parts, one an electro-positive and the other an electro-negative, and from this grew the dualistic system of Berzelius. The studies of Daniell and Graham in England, as well as the work of Liebig and Wöhler in Germany, resulted in the discovery of compound elements or radicals, and under Dumas the theory of substitution then came into general acceptance, which contended that elements could

replace hydrogen and carbon compounds atom for atom, the resulting compound being of the same type as the one from which it was derived. This led to the building up of compounds on various types of which the most important were the ammonia type (NH_3), the water type (H_2O), the hydrogen type (H_2), the hydrogen chloride type (HCl), and the marsh gas type (CH_4). The development of the theory of types led to the introduction of the idea of valency. It was shown that hydrogen was monad or monovalent, oxygen having the power of combining with two atoms of hydrogen, was a dyad or divalent, and so on up to heptads. The extension of this knowledge with the replacing of elements or groups of elements by means of other elements or groups in compounds, resulted in the production of new substances, the list of which has been extended almost indefinitely. Nearly all of modern organic chemistry is based on the extension of these ideas.

The Chemical Elements.—With the beginning of the century the elements known to exist were about 30, but with the growth of the science came a large increase in their number until there are now nearly 80. In 1864 Newlands arranged the elements in the order of their atomic weights, and found that certain relations were to be observed between the properties of the elements arranged in this manner. This subject was still further studied and amplified by Mendeleeff, who showed that when the elements were arranged in a tabular form, their chemical properties were a periodic function of their atomic weights; hence his classification is known as the *periodic law*. The recent discoveries of elements in the atmosphere, apparently possessing no valency, may lead to a possible modification of this table. Beginning with the decomposition of many of the alkalies and alkaline earths by Davy, who isolated calcium, strontium, barium and other elements by electrolysis, we find that the application of spectrum analysis under Bunsen and Kirchhoff resulted later in the discovery and chemical isolation of many other elements, as well as in revealing to us the chemical composition of stellar bodies (see *ASTRONOMY*). Subsequent to the publication of the periodic law, which clearly indicated the existence and properties of certain unknown elements, search for those missing elements resulted in the discovery of predicted members, which filled up gaps in the series. The study of the atmosphere and the radioactive rays have given the most recent additions in this direction.

Organic Chemistry.—The sharp dividing line between mineral or inorganic chemistry and the chemistry of carbon compounds or those derived from life, was removed by the synthetical production of *urea* by Wöhler in 1828, who showed the possibility of preparing this compound without the instrumentality of vital force. This brilliant discovery led to a remarkable development in the study of organic chemistry, which has resulted in the great coal-tar industries with the syntheses of dye stuffs, as alizarin and indigo; medicinal preparations, artificial perfumes and alkaloids, as *caffein*. The splendid work of Pasteur in studying the chemical changes produced by organisms, was the beginning of modern bacteriology, and laid the foundation under Lister for the antiseptic treatment of diseases; while it must be remembered that ether, chloroform, and other anæsthetic substances are chemical products discovered since the century began. Pasteur is likewise the father of stereochemistry, which has been developed largely by Van't Hoff and LeBel.

Industrial Chemistry.—It is impossible to attempt here even a brief description of the marvels of industrial chemistry which began with the manufacture of alkalies and acids, and has brought about the development of such colossal industries as the refining of sugar either from the cane or beet, and of oil. The dye stuffs have already been mentioned. It must also be remembered that photography is a branch of chemical technology, and from the first photograph made by Draper in 1839, down to the colored photographs of Lippman, the advance has been persistent. The utilization of electricity as a power at Niagara in this country, and at the falls of the Rhine in Switzerland, has inaugurated great electro-chemical industries at these sites where now aluminum, the alkalies, and chlorine are produced on a large industrial scale. The transformation of arid wastes by means of chemical fertilizers into blooming fields is another application of chemistry, which has been greatly developed since the studies by Liebig early in the century.

GEOLOGY.—The science of Geology received a wonderful impetus in the 19th century; since geologists began to recognize the bearing which such other sciences as physics, astronomy and chemistry might have on their own, and moreover came to perceive that the strata composing the earth's crust, were not heaped up in a chaotic mass, the product of some cataclysmic action, but on the contrary, often bore a definite and well marked relation to each other. This point had been emphasized, before the century began, by William Smith an English engineer, who demonstrated that the various rocks had not only been formed in regular order, but that each contained characteristic fossils, by means of which its position could be identified. Such theories were startling to geologists and

were at first disputed by some; but fortunately they were corroborated in the very beginning of the century by Cuvier and Brogniart in their work on the Tertiary deposits of the Paris basin in France. These beginnings of stratigraphic geology were followed by the work of Sedgwick and Murchison on the great series of Cambrian and Silurian rocks of Wales and Devonshire. From that time, stratigraphic studies have been actively pursued, in both hemispheres, and most of the formations studied have been classified and their subdivisions determined. In the closing years of the century, geologists were still occupied with two stratigraphic problems: the correlations of sections in widely separated areas; and the differentiation of the great mass of pre-Cambrian rocks, often grouped as Archæan. These rocks, owing to their great thickness and their folded, faulted, and often highly metamorphosed condition present many obstacles to the investigator. Cuvier's work in the Paris basin did more than merely corroborate Smith; it occasioned a controversy regarding the past life of the globe. In the fossil bones he found, Cuvier recognized the remains of animals different from those now living, and evidently long extinct. In 1816 he brought out these views in his celebrated work *Les Ossements Fossiles*. They were combated by many scientists, who asserted that all the fossils found in the rocks, had been buried during the deluge. Gradually as proof accumulated, the vastness of geological time came to be realized. During the first quarter of the century however there was a struggle between the followers of Warner, who believed that all rocks had been formed by water, and those of Hutton who suggested an igneous origin for most formations. The idea of the ever changing character of the earth's surface due to wearing down by weathering agents, and movements of the earth's crust due to internal forces, was but tardily recognized, the old theory being that all changes which had taken place in the past history of the earth had been sudden. This, however, had to give way to evolutionary ideas, which recognized the uniformity and continuity of the natural forces at work. Sir Charles Lyell was an exponent of this theory, although he did hold catastrophic ideas as far as the disappearance and appearance of faunas were concerned.

Gratitude is due to Darwin for having cleared up this error by the publication in 1859 of the *Origin of Species*. He pointed out that the apparent sudden change of faunas at times noticed, was evidently due to an imperfect knowledge of the geological section, and that there had been a gradual evolution from the lower types of earlier geological periods to the higher types of more recent ones. As the rocks of newly discovered regions have since been studied, many links in the succession of forms, at that time missing, have been found. For years the paleontologic discoveries had been mostly of forms lower than mammals, but in the last third of the century many species of the latter have come to light as a result of the studies of geologists in the western United States, and in South America. In 1859 traces of flint implements were found by Falconer in the gravels of the Somme, France, and there followed the discovery of the fossil skull of Neanderthal, and the remains of the man of Spy.

The early attempts of paleontologists of the century were largely bent on the identification of fossil species with those of modern times. But the error once recognized, the true relations were quickly worked out. The work of Lyell, Sedgwick, Murchison, Cuvier, Brogniart, Sapporta and Barrand in the Old World, together with that of Hall, Emmons, Vanuxem, Conrad, Newberry, Dana and others in the new forms a brilliant and voluminous chapter of geological history. It is only recently however that undoubted fossil remains have been found in pre-Cambrian strata, for the supposed Laurentian fossil, *Eosoon*, described by Dawson in 1846, is evidently an inorganic structure.

Glacial geology had its birth in 1823 in the discoveries and ideas of Perraudin, a French hunter. His theories were at first regarded with ridicule but Alexander Agassiz considered them seriously, and in 1857 brought out the work *Etudes sur les Glaciers*. Of still more recent date is the study of rocks by means of the microscope. The idea, although at first suggested by Sorby about 1856, was not elaborated until some years later when Zirkel, the German petrographer, took it up. It was not applied in the United States until 1876.

The entire science of geology in the United States has indeed attained its growth in a little more than than eighty years, and the working out of the classic paleozoic section by James Hall, in New York, forms a fitting introduction to American geological work. Much of the expansion and development of this work is due to the maintenance of both national and state geological surveys, under whose auspices the structural and economic features of the country have been investigated. Few foreign countries are without similar institutions.

In *Economic Geology* the century's record is filled with the investigations of the origin, nature, and alteration of ore deposits. These have yielded results of inestimable value to the mining engineer. *Mineralogy* does not show as varied a

development as geology inasmuch as the labors of its workers are chiefly of a systematic nature, and include descriptions of many new species. In the last quarter of the century mineralogists have turned their attention to a large extent to a study of the mathematical laws governing the relations and growth of crystals.

MEDICAL PROGRESS.—In 1800 the science of healing was divided into the famous seven branches: Anatomy; Chemistry, including Physics; Physiology; *Materia Medica*, including Therapeutics; Practice of Medicine, Obstetrics and Surgery. To-day, Gynæcology, Pathology, Bacteriology and Sanitation, including Hygiene, demand recognition as additional branches, and Practice of Medicine has been so divided that medical colleges support separate chairs of Ophthalmology, Otology, Neurology, Diseases of Nose and Throat, Diseases of the Skin, and Venereal Diseases. Special practice has come into vogue during the 19th century—a necessity due to the vast amount of knowledge gained in pursuit of the ramifications of the old seven branches. The advances in the science and art of healing have been greater during the past hundred years than during the ages between the time of Greece's glory and 1800. The anatomy of nerves and of viscera, of eye and ear; the true physiology of secretion, of digestion and of the nervous system have been given to the world during the century. *Materia Medica* has been enriched by hundreds of new medicines from animal, vegetable and mineral sources—the salicylates; the coal-tar derivatives, including antifebrin, acetanilid, phenacetin and sulphonal; as well as new alkaloids separated from crude drugs, including quinia, codeia, caffeine, atropia and strychnia, nuclein, pepsin and pancreatin; the serums used in modifying or detecting disease and the antitoxins. Elaborate and critical experiments on the lower animals have been made with medicaments to ascertain the influence of drugs; and statistical records of the use of drugs in thousands of cases of disease in human beings have been compiled. By the knowledge thus gained the ability of the therapist to check disease, to excite physiological action and to produce the most favorable conditions under which nature brings the body back to health, has been immeasurably increased. To Pathology, a branch new to the past century, the therapist owes an immense debt for knowledge of the normal characters and conditions of healthy tissue, and now the knowledge of the abnormal conditions, disordered function and altered metabolism of diseased tissue constitutes the foundation of all medical practice that is not mere charlatanism; and such knowledge has raised the healing art of the olden time to be the science of to-day. The medical use of electricity was a development of the 19th century, as were also phototherapy, scientific hydrotherapy and the rest cure. In the Practice of Medicine of a hundred years ago, diseases were assigned to one of two classes: "Pyrexia" and "Neuroses." "Pyrexia" were divided into Fevers, Inflammations, Exanthemata, Hemorrhages and Profuvia, and symptoms were largely mistaken for diseases, while inconsistency was rife. The refinements of the century taught that under the old nondescript term "Inflammation of the Bowels" were concealed colitis, enteritis, pelvic cellulitis, peritonitis and appendicitis; that the "putrid sore throat" of the olden time was diphtheria, a communicable disease due to a specific germ, seen and isolated; that "simple continued fever" was an ailment preventable under precautions and now termed typhoid; and that yellow fever is not of spontaneous origin in filth, but is a contagious disease due to a microbe. In 1796 smallpox ravaged England, and caused 18.4 per cent. of all deaths. In 1798 Jenner published the priceless results of his discoveries, in 1795, regarding variola and vaccinia. During the 19th century vaccination has been enforced in many countries, with the result that smallpox is seldom seen in them. The invention of the stethoscope made possible modern accuracy in diagnosis of conditions of the organs within the chest and opened an extended field of great value to the physician. The invention of the ophthalmoscope has revolutionized the treatment of diseases of the eye, and saved the sight of many a sufferer. The microscope, a daily necessity for most physicians, has come into use during the 19th century, as has also the clinical thermometer, an essential instrument of precision which has vastly increased the power of diagnosis and is the means of differentiating many diseases. The Roentgen Rays, still imperfectly understood, enable us to locate opaque substances imbedded in soft tissues, and often to decide upon the possibility of success of an operation for removal of foreign bodies or for adjusting fractured bones. A notable advance has been made in the treatment of insanity, whose study is temporarily coupled in the schools with that of neurology. No longer are the insane considered as possessed of the devil and brutish persons to be disciplined by keepers. No longer are they kept in asylums, but in hospitals. No longer is the lunatic considered as other than a sick man, to be tended by nurses. To-day the enlightened citizen recognizes

that as great a work is performed, through the use of careful nursing and protective medical treatment, in making the most of the remnant of pleasure possible in the life of one afflicted with a "mind diseased," as is performed in the brilliant domain of operative surgery. Previously to the discovery of the cause of puerperal fever, child-bed was dreaded as possibly fatal, because of the old-time prevalence of epidemics of that fever. The last century gave us the knowledge that preventable infection is the cause of this disease, and to-day puerperal fever is rare in hospitals or in the practice of competent physicians. Medical anæsthesia, discovered within the same wonderful century has robbed surgery of its horror, and made possible the performance of some serious operations. Chloroform, ether and nitrous oxide gas were first used as anæsthetics less than 60 years ago, and only 15 years ago cocaine was introduced for the production of local anæsthesia. The recognition that infection causes suppuration and hence failure or death in many operations led to the use of antiseptics to secure absolute cleanliness of the operator's hands and instruments and prevent the entrance of pus-producing germs into the wound. Among the century's operations, rendered possible through anæsthesia and antiseptics are ligation of various arteries, operations on the face and head, and in the cavity of the mouth, removal of tumors of the breast and many operations upon viscera in the abdominal cavity. The success of these operations depends entirely upon antiseptics. The ancient method of disinfecting wounds was by pouring in oil and wine. Only ordinary cleanliness prevailed at the beginning of the century. Lord Lister's methods of securing antiseptics and the modifications of his methods introduced in the main since 1875, have revolutionized the technique of surgery, reduced the probability of suppuration to a minimum, and raised enormously the percentage of successful operations. It is expected that an amputation wound will heal without rise of temperature, and without suppuration except in the track of the drainage tube. It is a common occurrence for peritoneal section to be made without shock. Donning of sterilized gowns by surgeons, thorough cleansing of hands and sterilizing of instruments, and the use of disinfectants in dressings are all due to the recent knowledge that suppuration follows the entrance of noxious germs into wounds. The establishment of the germ theory of disease is probably the greatest medical achievement of the century. We now know absolutely that certain vegetable germs called bacteria cause certain diseases. A few animal micro-organisms have been proved to be the causes of certain diseases. The acquirement of this knowledge has robbed disease of so much mystery that panic during epidemics is almost unknown. Study of the change resulting in the blood from the entrance of disease germs has been rewarded by the discovery that toxins produced by or existing in the bodies of the bacteria are the actual agents in some diseases, and that nature produces substances known as antitoxins in the serum of the blood of the sufferer, to combat the toxins. An elaboration of this idea has been followed by the use of serums injected into persons infected with certain bacteria, to combat resulting toxins. Among the blood serums used with success are the diphtheria antitoxin, antivenene and the antipneumococcic serum.

Sanitary science was born in the 19th century. Individuals are taught to use precautions against disease. Systematic inspections and cleansing of doubtful quarters of cities are practiced. School houses are built with a view to providing air space and sunlight for each pupil, and pupils are safeguarded against the spread of disease in the school room. Not only is milk inspected, and dealers and their wagons specially licensed, but dairies and cow stables are under the supervision of boards of health. Meat and other foods offered for sale are inspected by officers who enforce the laws enacted to prevent the sale of diseased meat or adulterated food. Quarantine officers' duty consists not only in detaining all infected vessels at a safe distance from the harbors, and isolating those who have been exposed to contagious disease, but also in watching foreign ports and preventing the embarkation of infected passengers or merchandise. The trained nurse is a product of the last century and the modern hospital has, besides saving lives which must have been lost under home treatment, conserved the strength of the sick and indeed of the relatives.

The results of the progress of medicine during the 19th century have been a reduction in the death rate, a consequent prolongation of the average length of life, and a vast increase in the sum of human happiness.

MILITARY PROGRESS.—The nineteenth century presents notable advances in the material for attack and defence. The general principles underlying strategic operations of war cannot be changed by development in the material, but the tactics of battle may be greatly modified thereby. The changes which have taken place are largely due to improvements in powder, projectiles, rifling and the breech-loading of firearms. These have greatly increased range, precision, and rapidity of fire,

which have given them tremendous effectiveness. It was not until well along in the century that any considerable improvements were made in firearms. Napoleon's armies used flint-lock, smooth-bore, muzzle-loading muskets of very short range and slowness of fire. His artillery were muzzle-loading smooth-bores; loading and firing with these, as with small arms, was a slow process. The application of fulminating powder, exploded by percussion to ignite a charge, was patented in 1811, but not till 1834 was it used to any extent in Europe, while in the United States it was not generally employed until 1850. This invention was essential to the metallic cartridge case, without which modern rapidity of fire could hardly have been attained. Rotating projectiles, by means of spiral grooves in the gun bores, permit the use of long conical projectiles, which traverse the air with less resistance than the old spherical balls, have greater weight, greater penetration, and can carry larger bursting charges. The improvements of powder, and especially the invention of smokeless powder, have enormously increased the energy and the distance to which projectiles can be carried.

With the improvement of guns, due to rifling, breech-loading, and smokeless powder, came a marked decrease in the calibre of small arms. Early in the century calibres ranged from fifty-four to seventy-three hundredths of an inch. At present the standard calibre is about 30, but the conical bullets of this size, covered with copper-nickel or steel envelopes, penetrate 16 inches of oak, whereas the 45-calibre Springfield rifle could penetrate only about 3 inches. Moreover, a round of the new ammunition is so much lighter that the soldier can carry three times as many rounds as could the soldier of 1861 without increased burden.

The first extensive use of breech-loading small arms was in the Austro-Prussian War of 1866, where the Prussian needle guns were pitted against muzzle-loaders, and proved their great superiority. After this, with the development of the metallic cartridge, breech-loading altogether superseded muzzle-loading in small arms. Repeating rifles, containing in a magazine a number of cartridges, next came into use. The first of these had tubular magazines, which were replaced by pocket magazines, holding usually five cartridges. Detachable magazines were then introduced, and these are being replaced by the "clip," which holds five cartridges. These are all quickly transferred into the gun magazine by a simple movement, thus increasing rapidity of loading. Rapid firing has been further increased by the invention of Hiram Maxim, for operating rifles, machine and quick-firing guns automatically. He utilized the force of recoil of firing or diverted a small portion of the powder gases to reload and fire until the ammunition in the magazine or on a feed belt was exhausted.

Machine Guns, consisting of a number of barrels of rifle calibre, were made from time to time through the centuries following the invention of gunpowder, but not until the self-igniting metallic ammunition was perfected were they made efficient. In 1872 Dr. Gatling perfected his machine gun, which then could fire 450 rounds a minute, and later, with the Accles gun-feed attachment, attained a rate of 1200 rounds a minute. The Nordenfeldt, Gardner, Colt, and the Maxim automatic guns followed. The Maxim gun fires, loads, and continues firing while a pressure on the trigger is maintained. The cartridges are fed from a belt, and the firing continues automatically as long as they are supplied. The rate is about 400 rounds a minute. Hiram Maxim has also invented the 1-pounder automatic gun, called the pom-pom, used in the South African War. Maxim has made a 9-pounder automatic gun, firing 60 rounds per minute, and automatic guns of larger calibres are now being designed.

Quick-firing Guns.—Preceding the development of the automatic guns came that of quick-firing guns of calibres up to 6 inches, throwing a 100-pound projectile. These last may be fired from six to eight times per minute. With their high velocity and rapid fire, quick-firing guns are now a most formidable part of naval and sea-coast armament.

Heavy Guns.—In order to produce metal able to withstand the great pressures from large charges of modern powders, new methods of casting and forging cannon have been invented. In 1860 General Rodman, United States Army, improved the method of casting guns by the use of a hollow core through which water was passed. This cooled the metal from the inside, secured an initial tension from the interior, thus obtaining greater resistance to the powder pressures in the gun bore.

In 1854 William Armstrong proposed to the English government to construct guns by heating and shrinking on a central-tube reinforcing cylinder, combining at first wrought iron with cast iron. His method was adopted in England. This was preceded ten years by Professor Daniel Treadwell of Harvard University, who proposed and built such guns in 1840, but did not receive governmental adoption. Modern cannons are now built up in an analogous manner. In England and the United States strong guns have been made by various systems of wire winding on tubes. Frederick Krupp led the way in making heavy built-up guns from crucible

steel. Owing to improvements in the manufacture of steel, and the greater masses which can now be made, as also better details of construction, it is possible to produce guns of very large calibre, that can attain velocity of from 2500 to 3500 feet a second. Increase of power is secured by lengthening the bore, so that large charges of powder may be burnt. The powder was improved so as to secure progressive burning. It imparts the energy to the projectile gradually without undue strain of the gun. The power has been so much increased that ranges of more than 20 miles are now obtainable.

Gun Carriages.—In order to take up the tremendous recoil of these charges, steam, pneumatic, hydraulic, and electrical power are freely employed in operating gun carriages and handling ammunition, both on shore and afloat. For shore fortifications, disappearing gun carriages, which lower the gun beneath the crest of the parapets after firing, are now used on sites of only moderate heights.

Projectiles.—Solid shots were chiefly used in the early part of the century, though shells exploded by a time fuse were not unknown. Conical shells, made possible by rifling, are now used, giving greater weight of metal thrown and increased capacity for bursting charges. At first, cast-iron shot and shell sufficed for the attack of fortifications and the wooden side of ships.

The improved armoring of ships broke up the ordinary cast-iron projectiles, and Colonel Palliser of the English army invented chilled cast-iron projectiles, which perforated the wrought-iron armor without themselves breaking up. Compound armor was then made, consisting of a hard steel face, combined with a wrought-iron backing, and the chilled cast-iron projectiles were defeated. Steel projectiles with a hardened point were devised. Harveyized all-steel, nickel-steel, and then steel plates were invented. The best steel projectiles of the day were broken upon impact. With the increase of velocity up to 2200 feet, secured by improved powder, although the same projectiles were broken up on impact at about 1900 feet velocity, the armor was again pierced. The addition of soft steel caps over the hardened points of armor-piercing shell increased their perforating power from 10 to 15 per cent., and once more placed the projectiles on a parity with the armor.

Powders.—Until about 1860 little change was made in the ingredients, method of manufacture, or form of gunpowder. General Rodman, United States Army, first formulated the idea of the progressive burning of powder and the necessity of adapting the granulation to the different sizes of guns. Baron von Lenk brought about the use of gun-cotton in the Austrian field artillery in 1860. This was practically the first smokeless powder used and was the first departure from the saltpetre, charcoal, and sulphur powder. It was not successful, and was abandoned because of its dangerous instability; gunpowder was somewhat modified and improved, the last being the cocoa powder, giving velocities of 2000 feet. A great variety of smokeless powders have been devised within the last twelve years. Most of these are composed of nitro-glycerine and gun-cotton or of other high explosives. The present trend is toward a pyrocellulose or gun-cotton powder without the nitro-glycerine. Cordite and other powders of a combination of gun-cotton and nitro-glycerine have been found unstable. Thirty-five hundred feet per second have already been attained, and with improved guns, stronger in the forward part, we may expect to secure 4000 feet in the near future.

High Explosives having far greater power than gunpowder have been discovered within the century. Among the most important of these are nitro-glycerine and gun-cotton. They have greatly increased the effectiveness of submarine mines and torpedoes.

Explosive and blasting gelatines, which consist of a combination of nitro-glycerine and gun-cotton, are the most powerful explosives known at present. They have the advantage of being relatively insensitive, requiring a strong detonator to bring about an explosion of the first order. Dr. Sprengel has invented a class of explosives, made by the admixture of an oxidizing agent with a combustible agent just before using. A large number of high explosives having picric acid as the chief ingredient are mainly used in torpedo shells. Among them are the melinite of the French and lyddite, used by the English in South Africa. Very many variants of the picric acid class are being presented, but they are not proven to be better than those first mentioned. Charges of explosive gelatine and gun-cotton up to 500 pounds have been fired with safety in torpedo shell from the pneumatic torpedo guns. These and similar torpedo guns can hardly fail to be valuable in harbor defence as well as on shipboard.

Submarine Mines were used during the Crimean War and our Civil War. They are now part of the defences of all harbors. Colonel Colt in 1842 was the first to explode by electricity a submarine mine. There are two kinds of submarine mines—those exploded by contact with a vessel and those which are exploded by judgment from the shore by electricity. Their moral effect has been considerable, although

it has been greater than seems to be warranted by their actual success in war up to the present date.

Other Devices.—The telegraph, telephone, and teleautograph are important aids for the maintenance of rapid intercommunication between the various parts of the huge armies which are likely to take the field. The balloon has been successfully used for purposes of observation on land, but it may also be used for observation at sea, held captive on shipboard. The automobile is being considered by the European Powers as a means of transportation of supplies for armies in the field, and is sure to be generally introduced in lieu of horses and mules. It will secure greater compactness of supply trains as well as increased speed of movement. It will thus very much simplify some of the most difficult problems with which commanding generals are confronted in field operations.

NAVAL DEVELOPMENT.—This century has seen a very great change in war-ships. Up to 1844 the old line-of-battle-ships, built of wood, propelled by sails, were still the finest naval craft afloat, but during the latter half of the century the use of steam became general. The screw propeller replaced paddle-wheels; steam boilers and engines were much improved; compound engines were followed by triple and quadruple expansion engines. The hulls were made of iron and steel, and steel was used to protect the hulls. The number of guns mounted was reduced, while their power has been constantly increasing. Modern naval vessels are built with double bottoms, and now sometimes have three. The space between these skins is subdivided into cellular compartments, filled with cellulose fibre or cornstalk pith, which swells upon becoming wet and excludes the water. The interior of the ship is subdivided by cross bulkheads, which limit the portion of the ship which could be flooded by any single perforation of the hull.

The size of vessels has greatly increased. In 1839 the largest ship built for the British navy was the *Queen*, of 3100 tons, while at present battle-ships of 16,000 tons displacement are being built. The speed also has greatly increased. *La Gloire* in 1859 made 12 knots. Cruisers of 14,000 tons can attain a speed of 22 knots, and with torpedo boats 35 knots have been attained. Greater speed is probable in the near future.

Throughout the latter half of the century there has been a contest between armor and guns. In 1855 the French built several floating batteries, armored with $4\frac{1}{2}$ inches of iron armor. They transformed a wooden ship into *La Gloire*, having 5 inches of iron armor. The English built the *Warrior*, which had $4\frac{1}{2}$ inches of armor. It was the first ship whose hull was entirely built of iron. In 1859 plates $4\frac{1}{2}$ inches thick were first manufactured by the French, but in 1863 plates 12 inches thick were made in England. At the present date steel plates 24 inches thick can be made. The power of the guns was constantly increasing, and by 1876, 19 inches of iron had been perforated. Then steel began to be used. Compound armor plates were followed by all-steel plates, and then by nickel steel. Harvey devised a method of case hardening the surface of steel armor plates, which were then found to be superior to the nickel steel untreated. Reforged Harveyized armor, developed at the Carnegie works, was found to be better than that not reformed after treatment. By 1895 the Krupp work had developed a modification of the Harvey process, which, although difficult to apply with uniform results, is the best yet developed, giving an increased resistance of about 15 per cent.

Turrets.—The revolving turret was first used in 1862 upon the United States steamer *Monitor*, designed by Ericsson, which defeated the Confederate armored ship *Merrimac*. The *Monitor's* turrets contained two 11-inch smooth-bore guns. The concentration of aggressive power and of protective armor, coupled with greater arc of fire, have made the turret an essential in all battle-ship and armored cruiser designs. The heavier guns are now usually mounted in turrets; broadside armament consists of the smaller calibres of the quick-firing gun class. The barbette system of mounting heavy guns is an intermediate form. In this the heaviest guns are mounted in the open on a turn-table, protected by an armored band or glacis.

Rams.—Most war vessels of to-day are built with powerful ram bows. There are but few instances in which rams have been used effectively, and these were either against disabled vessels or anchored vessels or accidentally. The ram *Katahdin* was built by the United States, while the English built the ram *Polyphemus*. The speed of both of these is less than 18 knots. This is insufficient, except for the attack of a vessel disabled in her motive power. If rams are to be effective, they should have speed at least equal to or somewhat greater than the greatest speed of battle-ships. It is a question for the present century to decide to what extent rams can be advantageously employed.

Torpedoes and Torpedo Boats.—During the Civil War, Lieutenant Cushing attacked and destroyed the Confederate iron-clad *Albatross* with a spar torpedo extending from a launch. This bold act called attention to the possibilities of torpedo

attack. About this time Robert Whitehead invented his automobile torpedo. Torpedoes now form a portion of the armament of all navies. They may be classified into:

First. Automobiles, which contain within themselves the motive power, and, once launched, are automatically directed on their course.

Second. Dirigible torpedoes, which may or may not have the motive power within them, but are connected by wire with a ship or station, from which they are steered. The Whitehead torpedo is the automobile chiefly used. The motive power force is compressed air. It carries a charge of gun-cotton. Admiral Howell invented a torpedo moved by energy stored in a rapidly revolving fly-wheel. The practical range of both of these torpedoes is from 600 to 800 yards, and the speed is about 32 knots. The chances of attaining a target more than 300 yards distant are not great. Of the dirigible torpedoes tested and partially adopted by the United States government are the Lay Patrick, propelled by the expansion of liquid carbonic-acid gas and steered and fired by an electric wire from a ship or shore station, and the Simms-Edison, which is driven by an electric engine, supplied through a connecting cable unreeling as the torpedo progresses. Great fleets of small, very rapid boats have been built to creep near enough to vessels to launch torpedoes successfully. The Parsons steam turbine, in which the steam is applied directly to the turbine, and thus to the shaft without the intermediary of rods and cranks, has given speed of 36 knots. To meet these vessels, torpedo-boat destroyers of a larger tonnage, equipped with quick-firing guns, as well as torpedoes, have been built. As yet, however, neither torpedo boats nor torpedoes have had much opportunity to show what they can do in war. The accuracy of the torpedo is not great even under favorable conditions. It is very doubtful whether the experiences of war will justify the extent to which all maritime nations have equipped themselves with torpedo boats and torpedoes.

Submarine Boats.—Submarine boats have been tried for more than a century, but only within the last few years have they received serious consideration. The function of such boats is to run just awash until near the vessels to be attacked, and then to sink and approach under water close enough to launch a torpedo. Of all those tried the boats invented by Holland have been the most successful.

The most important developments made in the armament of the world, both for land and sea, have been designed and manufactured since 1890. Changes are being constantly made, all apparently in the direction of progression, but based entirely upon theoretical considerations. The wars which have taken place since that time have demonstrated but little as to the practical value of the military and naval equipment of nations. This is due in a great measure to the unequal character, from a military point of view, of the belligerents concerned.

Naught but a war between two belligerents equally well prepared as to material and personnel will solve definitely the numerous problems involved.

PHYSICS.—Many old theories have been demolished during the 19th century to make room for new and more rational ideas, and the nature of the many problems to be solved in the future is clearly understood and their seriousness appreciated. The destructive work has included the doing away with the emission theory of light, the ideas of caloric and phlogiston, and the so-called "imponderables." The doctrine of the conservation of energy has been established as a governing principle, and the intimate relations between light and electricity have been demonstrated and their common properties are beginning to be understood. New forms of radiant energy have altered views previously held, but the nature of matter and the ether still remains a question for solution.

Sound.—The knowledge of the laws governing the transverse vibration of strings which existed at the beginning of the 19th century was soon increased by Chladni, who discovered the longitudinal vibration of strings and rods, and produced his famous sand figures to indicate the vibration of a plate. He also ascertained the velocity of sound in gases other than air by using organ pipes. That liquids transmit sound in the same manner as gases was next discovered, and Colladon and Sturm in 1827 obtained a value for the velocity of transmission in water (1435 metres). Pitch and the limits of audibility were studied by Cagniard-Latour with an improved syren, and by Savart who gave the range of audible sounds at from 14 or 16 vibrations per second to 24,000 or 48,000. The important event of the century in acoustics was the publication of Helmholtz's researches. To musical tones were assigned the attributes of intensity, pitch, and quality and the sounds of the human voice and musical instruments were analyzed and their separate components studied. Helmholtz' theory of harmony showed that the simpler ratios of vibrations were more agreeable to the human ear.

Heat.—Count Rumford was the first to attack the theory that heat was a substance (caloric) which was distributed through a body in the form of particles,

but it survived until the middle of the 19th century. In spite of this false notion, much valuable experimental work had been done in the previous century and the thermometer scales of Fahrenheit, Celsius, and Raumur having come into general use, the instruments themselves were subjected to many improvements. The mercurial thermometer was first compared with the air thermometer, where the expansion of a gas instead of a liquid is used to indicate temperature, by Dulong and Petit in 1815. Since that time not only has the accuracy of the air thermometer been increased, but by use of a platinum resistance thermometer extremes of temperature are readily measured. That all gases under similar conditions expand equally with equal degree of heat was discovered by Charles and anew by Gay-Lussac whose theory was confirmed by Dulong and Petit, and values for the coefficient of expansion of a gas were obtained with increasing accuracy by Rudberg, Magnus, and Regnault. In the liquefaction and solidification of gases, the first step was taken in 1823 when carbonic acid gas was liquefied by Faraday by subjecting it to pressure and using a freezing mixture. Improved methods and apparatus soon brought about the liquefaction of other gases, including oxygen, nitrogen, and hydrogen, and the close of the century has seen their solidification accomplished. The science of thermo-dynamics takes its origin from the treatise on heat published by Carnot in 1824. Robert Mayer is the author of the first law of thermo-dynamics in which heat is stated to be a form of energy, while to Clausius is due the famous second law that heat cannot of itself pass from a colder to a warmer body. Rankine in 1850 defined heat as a rotational motion of molecules, and Joule and later Rowland determined its mechanical equivalent.

Light.—The development and acceptance of the undulatory theory of light, first stated by Huygens in 1678 and its verification in experiments by Young in England and Fresnel and Arago in France is the most striking feature in the history of optics. Young discovered the principle of interference by which the formation of prismatic colors known as Newton's rings, was explained. Fresnel in a similar manner accounted for the formation of the alternate bands of dark and light known as fringes, and Malus discovered that light could be polarized, or its vibrations reduced to one plane by reflection. In 1849 the velocity of light was determined by Fizeau while about the same time Foucault determined the relative velocity of light in air and other media, his investigation taking away the last supports of the emission theory. This measurement of velocity was repeated in the United States by Michelson and Newcomb. The discovery of dark lines in the spectrum of the sun was discovered by Wollaston (1802), and later Fraunhofer found bright lines in the spectrum of artificial sources of illumination. The latter was the first to use a grating, or piece of glass with finely ruled surface to produce a spectrum and with its aid measured the wave length of sodium (yellow) light. The coincidence of the dark lines in the spectrum of the sun with the bright lines in the spectrum of an incandescent metal was early observed and to Kirchhoff is due the announcement that this fact indicated the presence in the sun of the substances which produced the bright line spectrum. From these experiments has been derived the modern spectroscopy with its applications to physical and astronomical research. In addition to the visible parts of the spectrum the infra red and ultra violet have been studied, the former being discovered by Herschell in 1800, while the latter rays were noted by Ritter and Wollaston. With the thermopile Melloni investigated the heat rays, and Langley with a delicate instrument known as the bolometer has been able to carry on the investigation of radiant energy with great success, measuring the radiation from the moon and even from a fire-fly. The discovery of photography by Niepce (1827) not only introduced a new art, but also placed additional facilities at the disposal of the physicist and astronomer. The accuracy obtained in optical measurements led to the suggestion of the use of the wave length of certain light as a standard of length, and this was accomplished in 1892 by Michelson who was able to obtain the length of the Metre of the Archives at Paris—the standard of length for the civilized world—in terms of the wave length of cadmium light, so that its duplication can be accomplished at any time in case of injury or loss. The development of theories of vision has progressed with the advance of optics and physiology. At the beginning of the century Young stated that the retina had three different receptive systems which were sensitive to red, green and violet respectively. This theory was modified by Helmholtz and Maxwell who used as their primary colors red, yellowish green and ultramarine blue.

Electricity.—A slight knowledge of the phenomena of frictional electricity, magnetism, and the voltaic cell, and electrolysis was possessed by the physicist of 1800. Improving the voltaic cell, larger quantities of electricity were at the command of the investigator, and from a suggestion made in 1803 the storage

battery was developed, being constructed in a practical form by Plante (1859) with plates of lead immersed in sulphuric acid through which a current passed. Electromagnetism takes its beginning from Oersted's discovery (1819) that a magnet was affected by a current and Ampere's observation that two currents act towards each other as two magnets. Then followed the galvanometer of Schweigger (1820), increased in sensitiveness by the astatic needle of Nobili, and developed into the delicate instrument for cable signalling of Thomson. In 1826 came Ohm's famous law defining electromotive force, current strength and resistance, the basis of modern theories and electrical measurements. Sturgeon of England in 1825 constructed an electro-magnet capable of lifting twenty times its own weight, and later Henry in the United States made electro-magnets of great power and conceived the idea of transmitting to them along a conductor current from a distance which would perform such work as the raising of a weight or the ringing of a bell, this form of signalling being the first electro-magnetic telegraph. The transition to the dynamo was not difficult, and after various experiments the magneto machine with the shuttle armature of Siemens (1856) resulted, and then the dynamo where the field magnets were excited by the current from the armature. Improvements in the dynamo soon made arc lighting possible on a large scale, and there followed a demand for a small and less intense lamp which was satisfied by the incandescent lamps of Swan (1879) and Edison (1880). To reverse the dynamo and use it as a motor first occurred to Jacobi (1850), and an actual practical machine of this kind was shown at the Vienna Exposition by Fontaine and Gramme. Early dynamos and motors were entirely of the continuous current type, but it was soon found practical and more economical to furnish not continuous but alternating current and this system is now used for the long distance transmission of power. The first application of the electric motor to traction was by Siemens and Halske in Berlin, but the rapid adoption and improvement of this source of motive power took place in the United States. From Henry's bell and electromagnet the modern telegraph has developed, but the telephone did not come for some years after, the earliest suggestion and the fundamental idea being due to Bourseul (1854) a French telegrapher, while Reis of Frankfort (1861) constructed a telephone which would transmit musical sounds and a few spoken words, and Bell (1876) invented the first practical telephone. While Gauss was studying magnetic phenomena he devised the C.G.S. or absolute system of units in which all the units needed are derived from the fundamental units of length (centimeter), mass (gramme) and time (second). The electromagnetic theory of light which plays so important a part in modern discussions was first enunciated by Clerk Maxwell and consisted in the statement that light and electromagnetic phenomena are of the same nature consisting of motion in the same medium. The electromagnetic waves were first produced by Hertz, and when the instrument known as the coherer was devised the transmission of signals or wireless telegraphy was possible. The passage of electricity through a vacuum or highly rarefied gas was also investigated and with the improvement of the vacuum most interesting effects were produced. From the cathode rays thus found and studied by Hertz and Lenard the next step was to the X-rays of Roentgen, which traversed opaque objects. They were followed by the new but somewhat similar forms of radiation found to emanate from uranium compounds, and their discovery marks the closing years of a century whose wonderful advances in this science can be suggested only, rather than described, here.

PSYCHOLOGY.—Immanuel Kant, writing in 1786, declared that psychology could never attain the rank of a true science. This judgment was doubtless based, to some extent, upon the unscientific character of the *Erfahrungsseelenkunde* which, at the end of the 18th century, played so large a part in German popular philosophy. But the arguments by which Kant himself sustains his position are of an *a priori* nature. In the first place, he says, there can be no true science without mathematics, and, as mental process evinces only one dimension, that of time, a scientific psychology is impossible. The result of any attempt at mathematical treatment would, at best, bear the same relation to a science of mind that a list of the properties or the straight line bears to geometry. In the second place, psychology can never be an experimental discipline. For no thinking subject will advisedly submit himself to our experiments; nor could we reap advantage from an experimental inquiry, even were its conditions so far realized. It is of the essence of psychological method, of introspection, that it changes and distorts the objects upon which it is directed. A natural history of mind, then, we may some day possess; a science of mind is out of the question.

Kant laid his finger upon three points of weakness: the lack of exact formulation, the lack of experimental control, and the lack of an objective method. The remedying of these three defects, in chronological sequence, has raised modern

psychology to the place which it now holds in the circle of the sciences. And although science is international, and all the civilized nations have had their share in the psychological movement, we must add that the impulse to reform was given, in every case, by Kant's countrymen.

Herbart.—First in the list of reformers stands the name of J. F. Herbart (1776-1841). Herbart pointed out, as early as 1808, that the stream of consciousness is a product of two dimensions, time and intensity. Ideas differ not only in duration, and in their position within a temporal continuum, but also in strength, insistence, vividness. But where we have two variables there we have the possibility of mathematical application. It is true that the elaborate constructions and dynamical formulæ of the Herbartian system are now disregarded. But if Herbart's work is now antiquated it is none the less fundamental. There are periods in the history of a science, as there are in the history of the individual, where events of the first magnitude are crowded into brief spaces of time; and we are apt, in such cases, to neglect the beginning for the end. Herbart should be remembered, first, as the man who, by his scathing criticism of the vicious faculty-systems, cleared the ground for a saner view of the nature of mind; and, secondly, as the embodied refutation of Kant's first objection.

Fechner.—Modern psychology took shape as the resultant of many forces. Physics, astronomy, physiology and philosophy each contributed something towards the final result. If, however, we are to name one man as the father and founder of the science, our choice must fall, without hesitation, upon G. T. Fechner. Fechner's life (1801-1887) covers the greater part of the 19th century; and his *Elemente der Psychophysik* (1860) marks an epoch in psychology. His guiding principle was the correlation of mental process with the physical stimulus which excites it. It is clear that the application of this principle opens the door to a valid employment of mathematical formulæ in the sphere of mind. It is clear further, that it objectifies the subject matter of psychology, and so furnishes the conditions of psychological experimentation. And with the beginnings of exact formulation and of experimental control came the first inkling of an objective psychological method. Fechner's work has been greatly misunderstood, and his achievement greatly underestimated. His overhasty generalization of Weber's Law has thrown undeserved discredit upon the psychophysics at large, and his personal occupation with the intensive aspect of consciousness has tended to restrict the field of study in popular estimation. Weber's Law stands to-day as but one among many uniformities of mental function; and experimental psychology has passed beyond the intensity of sensation, beyond sensation itself, to grapple with more complex processes and with total conscious states. But we owe to Fechner the general principle which underlies as postulate all later experimental work: the principle that mental process can be expressed as a function of measurable material processes. We owe to him, further, a number of schemata or patterns of experimental inquiry, carefully and thoroughly worked out upon a mathematical basis,—the 'psychophysical measurement-methods,' as they are now called. And he has bequeathed to us, finally, experimental monographs in the spheres of feeling and perception, which will serve as models of investigation for many generations.

Wundt.—Fechner, then, reaffirmed Herbart's answer to Kant, and himself answered Kant's second objection. The refutation of the third Kantian criticism was reserved for W. M. Wundt (b. 1832). We have learned from Wundt that introspection, rightly conducted, does not interfere with the process which is its object; that introspection consists in nothing else than an attentive experience of the process in question, and a subsequent account of it in fitting words; and that the psychological experiment supplies the conditions under which the results of introspection attain a comparative value,—in other words, provides psychology with a method of objective validity. Wundt, again, by the foundation of the first psychological laboratory in 1879, assured for Fechner's principle of correlation a continued and impartial trial. He has himself carried the principle a step beyond the point at which Fechner left it, insisting that mental process is to be paralleled, not only with physical stimulus, but with neural process, and thus adding an 'internal' to Fechner's 'external psychophysics.' It is sometimes said that Wundt's physiological psychology has not done all that was expected of it. But we must distinguish between legitimate and illegitimate expectation. Psychology ranks to-day as a science among the sciences; she has her laboratories all over the civilized world, her technical journals in all civilized languages; she has at her disposal a vast body of results, factual and methodical, in the domain of the simpler mental processes; she has established a goodly number of laws of the inner experience; and she is successfully attacking the more subtle problems of attention and action, of judgment and discrimination.

The English School.—Turning from Germany to England, we find the empirical

psychology that has its roots in John Locke bearing fruit worthy of a scientific century. This psychology eschews physiology; its aim is the exact analysis of mind, considered as the organ of knowing. Avowedly empirical in aim and method, it is at first somewhat distrustful of the German revolution; a psychology that builds upon experience, and builds successfully, seems to have no need of experiment. The work of the traditional English school culminates in the two monumental works (1855, 1859) of A. Bain (b. 1818). H. Spencer (b. 1820) brings within its scope a wide range of new problems, by his thorough-going application of the genetic principle (1855). The English psychology of the latter half of the century has a more international flavor. Following the lines laid down by Locke and Hume, Mill and Bain, it still derives much from Herbart and the Herbartians, from Lotze and Wundt.

Activity in all Countries.—These are the two main directions of psychological advance. If, now, we look at the present status of the science, we see the signs of activity in many and various fields. France has worthily exploited the heritage of empirical psychology that she received from the 18th century; she has adopted the experimental method, and applied it to genetic uses; and she takes the lead in the new discipline of 'social' psychology. Good work has been done in Germany, England and America upon comparative psychology; the animal mind is gradually becoming intelligible, and 'instinct' losing its old-time mystery. The United States is second only to Germany in the psychophysical sphere; has taken 'child psychology' and the application of psychological principles to the art of education as its peculiar province; and rivals France in its contributions to the psychology of the social organism. International congresses bring together the representatives of mental science, 500 at a time, from Europe, Asia and America. The outcome of all this labor and enthusiasm cannot yet be estimated in detail. Wundt's laboratory, be it remembered, has but recently attained its twenty-first birthday; and psychology from its historical connection with philosophy and its intrinsic relation to such disciplines as ethics and sociology, requires more extended and deeper-laid foundations than do the sciences that find their common origin in mechanics. Mistakes, then, may be expected. Indeed, they have been made in plenty: we saw that Fechner, while he committed no error of principle, erred in fact by his apotheosis of Weber's Law; and we may add that even Helmholtz's reputation fails to sustain his theories of color vision and of space perception. Where such men go astray, it would be absurd to suppose that error and prejudice and misdirection of energy are not playing their full part in current psychological work. But Fechner and Helmholtz were, none the less, psychologists of the first rank, and the task of exploration is pushed on none the less surely because the guides are sometimes misled and the careless and incompetent fall by the way.

CONTINENTAL LITERATURE.—It has become commonplace to say that literature is the mirror of life. Sentimentalism (*Werther*) intermingled with classicism prevailing in the last quarter of the 18th century reflected the *zierlich-maenierlichkeit* displayed in the powdered wigs, the stately minuet-tunes and the ceremonious etiquette of court life. It was the calm preceding the storm of which the first and most violent outbursts were the dark days of 1789-93. These were signs that the forms of aristocratic feudalism had outlived their usefulness. Steam revolutionized the industrial system; free competition was only the economic aspect of individualism—the keynote of the 19th century. Through the many impacts received in the general tussle while Europe was the field of exercise for Napoleon's unbridled genius, the continental nations came to self-consciousness. The abstract conception "man" gave way to creations of flesh and blood. A German, a Frenchman, an Italian, a Russian, a Pole are the objects of interest and study; not man in general. Of the two supreme types of Hellenic classical beauty, Schiller had died in 1805, and the Olympian Goethe, though tenaciously clinging to classicism, presented enough elements in his later works ultimately to bring his followers to romanticism.

Romanticism.—The third decade of the century saw this movement in full swing. It broke out in Germany with renewed force after a twenty-year interruption (Goethe and Schiller) which had followed the *Sturm und Drang* period. Of the three principal articles of romantic faith—love of the mysterious and picturesque; subjectivity; and breaking loose from artistic traditions and conventions—the first two had been present in the early romantic productions of the last quarter of the 18th century, including Goethe's works like *Götz von Berlichingen* (1773). But the spirit of self-assertion against the shackles of formalism was chiefly a new product—a necessary reaction from the classical domination. The powerful coterie of the Brothers Schlegel, Thieck and Novalis was the æsthetic and theoretical champion of the new movement. Goethe was influenced by it in his latest creations—*Wanderjahren*, *Waldverwandschaften*.

etc. In France, romanticism found support in Hugo (1802-85). His *Odes et Ballades* (1826), *Orientales* (1828), and the drama *Cromwell* (1827) were bombs thrown into the camp of self-complacent classicists, while the preface to *Cromwell* laid down the theoretical foundations of his romanticism, and *Hernani* (1830) sealed the doom of the "unities" in drama. In Italy Leopardi's odes, in which *Weltsehmerz* found a classical form, were the cry of anguish of a precocious genius on realizing the lethargy into which Italy had fallen from her former supremacy in art and letters. It was the rallying call to national unity in an idiom of perfection long considered lost. But the lofty serenity of Leopardi's thought was supplanted by Manzoni's romantic spirit. The tragedy *Il Conte di Carmagnola* (1820), though praised by Goethe, and the psychological drama *Adelchi* (1822) were hardly noticed; but his masterpiece *I Promessi Sposi* (1827)—a novel of inward psychology and not of external accessories—marked the triumph of the new school. In Russia Pushkin inaugurated romanticism with his *Ruslan and Lyudmila* (1820) which he followed up by the Shakespearean drama *Boris Godunoff* (1825) and the Byronic verse-novel *Yevgeni Onyegin* (1825-32), while Mickiewicz did the same in Poland with his *Ballads* (1822) and later his *Ancestors* and *Conrad Wallenrod*. Though the classicists displayed stubborn resistance, their bulwarks were demolished by the current of events, and in a few years the romantic movement was dominant throughout Europe. The passionate lyrics and dreamy plays of de Musset, the semi-parnassian polish of Gautier (1811-72), the great historical frescoes of Dumas, the titanic humanity of Balzac, the reckless disregard of accepted conventions by George Sand, all in a measure go back to the power of Hugo's lyrics and his noble series of novels beginning with *Notre Dame de Paris* (1831).

The years preceding the revolutionary days of 1838 produced the brilliant crowd of young Germany—the paradoxical combination of fiendish malice and womanly tenderness and passion known as Heine; the less poetical but almost equally brilliant Börne, and Laube. They gave the German *hed* its final perfection; they swept away the extremes of romanticism by the lashes of sarcasm and caricature. While the tendency towards national unification brought a host of patriotic poets, only the works of Geibel (1805-84) have the ring of genuine art about them. In Italy the first attempts of Garibaldi precede by a short time Manzoni's recasting (1840) of his *Promessi Sposi* into the Tuscan dialect in the attempt to give it a pan-Italian garb. The second French empire, with its bourgeois ideals, was the period of greatest activity, of the proud gathering of the *parnassiens*, the men of golden feet and clay heads. Metre and external finish were reduced to a cult; the subject matter to a mere excuse for the artistic form. If these were the direct descendants of the Romantic movement on the side of Théophile Gautier, from the same movement on the other hand issued the later realistic school. It was in the eastern part of Europe that literature received a great impetus towards development on new and original lines. The romantic school of Pushkin, Mickiewicz and Slowacki directed the Slavic authors towards the study of the life of their nations in the past as well as in their own time. Gogol, who started with the humorous sketches of sunny Ukraina—half-tales, half-phantasies—soon ventured upon the road of the new *natural* school, with his comedy *The Revisor* (1836). Throughout the comedy, rollicking fun and stinging wit were tinged by sadness, that had a tragic note about it. It was the bitter laugh of a poet who saw the whole of life as made up of paltry things, that pass unnoticed by the crowd. *Dead Souls* (1841-2) embraced the whole of Russia, from peasant to highest official, and pictured it in mighty strokes of humor and severe realism. The critic Byelinski from the Hegelian romantic idealism turned to healthy realism, and became the champion of Gogol and the "natural" school. Henceforth a literary production was approved in such degree as it furthered the attainment of the social and ethical ideals of society, and condemned when it tore itself away from life and was "art for art's sake." The decade of the Forties was a brilliant epoch in Russian literature: the future literary glory of Russia was all more or less a direct product of Byelinski's school.

The Rise of the Novel.—The chief characteristic of this period of continental literature is the ascendancy of the novel as the type of "literature" in the popular mind, and that at the expense of poetry which had reigned supreme. The truth is that the great advance in the exact sciences about the middle of the century was anything but conducive to poetry. To men of science, poets were mere dreamers; hard facts—psychological, historical, economic and sociological—were demanded in literary productions. Hence the origin of the realistic school in France with its materialistic conceptions. The works of Stendhal, going back to the fourth decade of the century, the stupendous *Comédie-Humaine*, followed by *Madame Bovary* and other books firmly established the movement. The

followers of Stendhal, Balzac and Gautier, Huysmans, de Goncourt, Zola, Mendès, Maupassant and partly Alphonse Daudet, presently evolved into the *naturalistic* school sneeringly called "*protocolists*." The novel in their hands set forth phenomena of psychical and moral life, recorded with almost photographic accuracy, and seasoned with more or less literary quality, so as to make attractive reading; for the facts presented were usually drawn from repellent situations. Hungary too, came to the world's notice through Jokai, a romantic in early youth, a fanciful realist after 50 years of literary activity. In his works (over 300 volumes) he drew the whole life of his country with the hand of a master in vivid delineation and glowing colors. In Germany the third quarter of the 19th century can boast of very few representative names. Gustav Freytag in his historical and realistic novels and Spielhagen grappling with sociological questions, are the only ones until more recent times. The place of honor during the last three or four decades of the century is given to newcomers in European literature. The small countries of Scandinavian origin and Russia produce perhaps the greatest writers of the close of the century. The Norwegians Bjørnsen and Ibsen, writers of historical novels in the romantic strain until about 1870, subsequently busy themselves with broadly realistic descriptions of Norwegian city and home life, and their works dealing with social problems place them in the very front rank of continental writers. In Russia the flourishing period of the Forties was forcibly cut short by Nicholas I. after the upheavals of 1848 in Europe. In his fear of revolutionary outbreaks he wiped out the liberal tendencies which had inspired Turgeneff's *Annals of a Sportsman* (1847), and the Fifties presented a field of desolation. The Sixties stand for everything that is best in Russian literature. The extreme idealism characteristic of the Russian is curiously interwoven with an aversion to anything affected, unnatural or strained, that is in its way quite as pronounced and remarkable as the ancient Greek's absolute feeling for the beautiful, and sense of proportion. From this combination of idealism and uncompromising realism has sprung the modern Russian novel as exemplified in the works of Turgeneff, Dostoyefski and Tolstoy, to mention those best known to foreign readers. The unusual power of the Russian authors of placing themselves in the position of the personages described brought the trait of *pity* to Russian novels as contradistinguished from the arraigning method of the French "*naturalistic*" school. Through the "*peasantist*" literature of the Seventies and the comparative lull of the Eighties and part of the Nineties, the Russians have consistently held their ground in the line of fiction, and the works of the latter day "*verists*," realists, naturalists *et tutti quanti*, like Bourget, Loti, Prévost, Hauptmann, Sudermann, Fogazzaro, d'Annunzio, Serao, are all confessedly lineal relatives of *Anna Karenina*, *War and Peace*, *Crime and Punishment*, *Liza*, *Rudin*, etc. The over-exuberant zeal of the representatives of this school brought on a reaction in certain quarters, in the direction of "*art for art's sake*," as in the case of the decadents, symbolists and mystics of the Nineties. The rabid individualism deified in the passionate outbursts of Nietzsche is their battle-cry: give full vent to your individuality untrammelled and unadorned, and you produce the highest conceivable works of art. Another literary current away from realism is the latest romantic revival, which found its greatest representative in Rostand. What was considered a dead issue took a new lease of life and the old question of pure art *versus* art with social tendencies or realism cropped up again.

ENGLISH AND AMERICAN LITERATURE.—The Anglo-Saxon literature of the nineteenth century has had to deal with a life more complex than has any previous age and more enthusiastic than any except, perhaps, the Elizabethan. It has been an age of new thought. A whole new theory as to the origin of man has drawn attention to man's personal problems. A myriad of new inventions have enriched his life. Increased facilities of communication have brought all classes of men in closer touch with one another; increased facilities for publication have given an opportunity for the presentation of each man's personal problem. Men have become interested in one another as well as in their own habits of thought.

One result of all this interest has been an extraordinary growth in popularity of fiction, which has shown itself to be the most convenient literary form for the indication of human character. It has exhibited no single tendency during the century. Its phases have varied with the phases of general thought. Between 1811 and 1818 Jane Austen's novels appeared, simple and sincere pictures of real life. Scott's, on the other hand, reproduced the pageantry of ancient days as he saw it; and although his stories have had an enormous influence on his successors, they do not represent the "*human*" spirit which ran through the century. With Dickens, Thackeray, Brontë, Lever, and Trollope there was a return to the novel of manners. Charles Kingsley set forth certain phases of sociological fermentations. Charles Reade returned to the dramatic novel. "George Eliot" represented systematic

analysis and synthesis of human character. During a period preceding the last three or four years of the century, expression of phases of life became more exact. Influenced in a measure by the French realists, a few authors, George Moore and Thomas Hardy among them, tried to show life "realistically." "Realism," however, never took a strong hold in the Anglo-Saxon mind. At the same time that Moore and Hardy were recording the experiences of Esther Waters and Jude the Obscure, George Meredith was creating his series of impressionist character studies. His stories, Stevenson's romances, and Hardy's *Tess* outlasted realism.

● America interest in life problems was chiefly represented by Hawthorne, the greatest of our novelists, and in later years by Mr. William Dean Howells and Mr. Henry James. Cooper, who preceded Hawthorne, followed Scott as a romanticist. The other figure of chief importance in American fiction is Edgar Allan Poe, who developed the short story, a form of fiction in which Hawthorne also excelled. Afterward, with the growth of periodicals, it became exceedingly popular. In the latter years of the century Mr. Kipling was the chief exponent of this form.

In the last years of the century there was a reaction against the "problem novel" and a return to the historical romance.

At this time the number of readers had increased enormously, and the sale of novels had obtained a proportionate growth. Interest in poetry and in the drama as literature, however, had apparently waned.

Poetry.—In the beginning of the century poetry flourished, particularly in England. The little company of writers, including Wordsworth, Coleridge, Southey, and Landor, and, besides them, Shelley, Keats, Scott, and Byron, all lived and wrote between 1800 and 1850. All, except Scott, were inspired with the enthusiasm of the French Revolution, and expressed each in his own way the working out of the personality of men. To this period belongs also the romantic Tom Moore. These poets produced among longer poems some of the most beautiful lyrics in the English language.

Besides Wordsworth and Byron, the two figures that stand out in greatest relief among the poets of the century are Alfred Tennyson and Robert Browning; Tennyson for his perfection of form as well as for his charming thought, and Browning for his splendid dramatic strength and deep insight into human nature. Another school of poets arose in the last half century—the Pre-Raphaelites, including chiefly Dante Gabriel Rossetti and William Morris. Algernon Charles Swinburne is in a measure allied with this school. Their poetry was distinguished for beautiful form and unconventional thought. Among other English poets who cannot be passed over even in this brief review are Macaulay, Arthur Hugh Clough, and particularly Matthew Arnold. In the latest years of the century a number of poets were producing verse more or less sound, among them Mr. Watts, Mr. Stephen Phillips, Mr. Henley, Mr. Thompson, and Mr. Kipling.

America has produced but one eminent school of poets, that company of literary men who lived in or near Boston during the middle of the century—Lowell, Holmes, Whittier, and Longfellow. Their poetry is simple and sincere, but, as a whole, hardly as lofty in thought as the poetry of Bryant and Emerson. Among the other American poets, Halleck and Drake, the erratic Poe, Bayard Taylor, Bret Harte, and Richard Henry Stoddard have been, perhaps, the most widely read.

Essays and Criticism.—This has been a century of essay and criticism. With the early poets in England were associated critics of literature, who wrote for the *Edinburgh Review*, the *Quarterly Review*, the *Westminster*, *Blackwood's*, the *London Magazine*, and other periodicals. Many of the poets were themselves essayists—for example, Coleridge and Landor. To this period belong the works of Hunt, De Quincey, Hazlitt, and Lamb. Later in the century came Thackeray, the intellectual Macaulay, the truculent Carlyle, whose thought had, perhaps, as great an influence in developing individualism as that of any writer of his century, Ruskin, Matthew Arnold, Walter Pater, and Robert Louis Stevenson. There was developed a system of analytical criticism of literature, which was in the latter years of the century in a measure crowded out by the inrush into the periodicals of new facts; but criticisms of manners and morals have endured. The United States has produced among essayists and critics Irving, Lowell, Holmes, Thoreau, Charles Dudley Warner, Howells, Burroughs, and, overtopping all of these, Emerson.

Periodicals.—The increase in the number of periodicals has been very great. In England the development has been chiefly in the line of reviews, wherein criticism of literature and affairs has been predominant, although *Blackwood's*, which published fiction, was founded early in the century. In America there has been an enormous development of the popular magazine. A few decades ago such magazines were chiefly devoted to letters and to description of travel, for at that time the world was not as well known as it is to-day. At present most of the American magazines include articles on topics of the day. They were partly forced to adopt this measure on account of the competition of the newspaper in public interest.

The newspapers have encroached upon the monthly magazine and have imperilled the existence of the weekly magazine. They present not only criticism of all phases of art, but also fiction, often by eminent writers. Their work is not usually of good quality, but is widely read. The magazines of the United States have in late years attained large circulation in England, and English magazines have made an effort to compete with them along their own lines, but England still maintains a number of magazines of criticism, whereas in America the *North American Review*, mainly devoted to affairs, and *The Bookman*, *Critic*, *Nation*, and *Dial*, devoted to literature, are the only really critical magazines. The century produced a considerable number of writers on sociology, science, and philosophy. Among the books that have had the greatest influence are Darwin's *The Origin of Species*, the works of Spencer and Huxley, and those of John Stuart Mill.

In history the tendency in the later years of the century has been to describe not so much the wars of kings as the progress of peoples. In England, Hallam, Buckle, Carlyle, Macaulay, Froude, Freeman, Lecky, and Greene; in America, Bancroft, Motley, Prescott, and Fiske represent this spirit.

AMERICAN LIBRARIES.—In almost every particular the library development of the United States during the last century has far exceeded that of any other country. If the library is viewed as a part of the educational system, this is emphatically the case. This brief sketch will therefore be confined to the American library movement.

In 1801 when the population was five and one-third millions there were 64 libraries intended for popular use—or including Dr. Bray's parish libraries—perhaps 100 collections accessible to the people, containing in all not far from 100,000 volumes. The oldest American library, that of Harvard College, founded in 1638, had at the beginning of the century, only a little over 12,000 volumes; the largest, the Philadelphia Library Company had in 1807 but 18,391 volumes. Less than half a dozen had 1,000 each and the average was 500 volumes. In 1850 Dr. Jewett reported 644 libraries (exclusive of district schools) with 2,144,069 volumes. The special government report of 1876 enumerates 3,647 libraries of 300 volumes or more, with an aggregate of 12,276,964 volumes. In 1896 (the date of the last exact figures obtainable) there were 7,191 such libraries with 34,596,258 volumes. It is safe to say that at the end of the century there were 8,000 American libraries of 300 or more volumes, with an aggregate of 40,000,000 volumes. A conservative estimate of the realty and endowments of these libraries places them close to \$100,000,000.

At the beginning and throughout the first half of the century the typical library was the proprietary or athenæum library—supported by a stock company and available only to its members. The first tax-supported library was that of Peterboro, N. H. (1833). Besides support from taxation, the last decade witnessed gifts to libraries exceeding \$24,000,000. Andrew Carnegie alone has given upwards of \$10,000,000—of this over \$3,500,000 in 1899. The last decade also has seen 5 libraries built or begun whose aggregate cost will exceed \$15,000,000. These notable examples include the Library of Congress, \$6,950,000; the Boston Public Library, \$2,500,000 and the New York Public Library, \$2,500,000 (at least). Among the most noteworthy collections are the Congressional Library, 1,000,000 volumes and pamphlets, with an annual budget of \$513,553 and the Boston Public Library, 750,000 volumes, receiving \$255,000 from the city, and the income from an endowment of \$273,000. Some idea of the "work" done by these institutions is shown by the fact that the Boston institution circulated in the year 1899-1900, 1,251,451 volumes to 63,695 registered borrowers. In the same period the Philadelphia Free Library circulated 1,758,851 volumes.

The New Spirit.—During the century, and especially during its last quarter, chiefly through the influence of the American Library Association, the spirit and aims of all library activity have changed. Formerly the librarian strove to get and keep his books, giving them out—not always ungrudgingly—to those who demanded them. Then the constituency was chiefly composed of scholars or students; now the only prerequisite is a knowledge of the first "R," and even those of the picture-book age are provided for and welcomed. In place of formality, frigidity and cumbersomeness has come "sweetness and light," attractiveness, cordiality and simplicity. This change in spirit has called for a new type of librarian. Trustees are now likely to seek vigorous men and women, endowed with special aptitude for the work and equipped with a collegiate education, supplemented by a technical course in one of the training schools for librarians. The head librarian of a great modern library is more of an executive officer than a scholar. He thinks first of the educational work his library is doing and inspires his staff with the same spirit.

Formerly at least half of the library appropriation was expended for books. That was when the library was a passive agent. But with the effort to extend its

benefits to all the expenditure for books forms but a small fraction of the total appropriation. In Boston—the greatest city library—out of a \$250,000 appropriation only about \$25,000 or \$35,000 go for new accessions; the rest is used for their care and circulation.

The Modern Library has special collections for reference, collections of periodicals, newspapers, patents, public documents, manuscripts, prints, and music, collections for the children and for the blind, with a trained assistant in charge of each. It sends books into the homes not simply from the main library, but through branches and delivery stations; its shelves are open, inviting direct contact with many books; bulletins, reference lists, special exhibitions and newspaper notices are all called into service to advertise and bring the library to every home. Of these agencies none is more hopeful than the work for the children. Gradually the library has won the right to be considered as much a part of the educational system as the public school. The idea of having travelling libraries sent from the central collection to the school buildings is winning its way.

In 1835 the New York school district library law was passed. This was the first recognition of the principle of taxation for the support of public libraries. New Hampshire passed a law in 1849 allowing towns to tax themselves for the same purpose. Now almost every State has a library law. In 1891 New York State began the sending out of travelling libraries; now a travelling library system has been established in 42 States, in which the benefits of culture are extended to the smallest hamlets. Seventeen States have library commissions which distribute subsidies for the permanent establishment of rural libraries (usually \$100 to each). In 1876 the American Library Association was founded and by its efforts has made librarianship a profession. Now there are 30 state and local associations, and in 1896 a library section of the National Educational Association was organized. In 1887 a school of library economy was established at Columbia. Later it was removed to Albany and renamed the New York State Library School and 500 of its graduates are in library work; several similar schools have been established in other parts of the country. Of all the century's progress in library development its last decade saw the most rapid growth. The earlier period was one of pioneer work,—the fight for existence and recognition; then came the solving of the technical problems of cataloguing, classification, etc.; in recent years the emphasis has been laid on the process of humanizing and vitalizing the library. See LIBRARY ASSOCIATION, AMERICAN.

MUSIC.—The classical traditions of Mozart and Haydn, in whose works form reached its acme of perfection, were kept up by men like Cherubini in the early part of the century. But just on the border between the two centuries looms up in heavy lines the figure of the indomitable Beethoven, who sounds the note of unrest and turbulence in the works following his first Symphony composed on Mozartean lines. His uneven temper, though it brought him to want, wrought untold good for the democratization of music: he could not and would not get along with Maecenas and had to appeal to the many for a hearing of his works. Once rid of the encumbering patrons he gave free rein to his feelings: expression was his object, as form and technique had been fully developed by his predecessors. Thus was born *Romanticism*. His departures in form (Scherzo for minuet; descriptive titles for symphonic movements; chorus and solo voices in the IX Symphony) were all in the line of expression, without materially altering the classical structures. His followers Schubert and Schumann carried the principle of expression to further lengths. Their music is more often punctuated with sound-combinations that exactly express the emotion but would have horrified a classicist. Another "romantic," Mendelssohn, is the elegiac romantic, though strictly classical as to form. The striving for definite expression in music gave rise to the *Symphonic poem*. The composer was guided by a poetic work in his composition, and the hearer, bearing the text in mind, could follow the intricate changes in the music which were to express the succeeding emotions and situations of the poem. Berlioz, Liszt, Saint-Saëns, Raff, partly Tchaikowski and Dvorák, all at discretion disregarded the four traditional movements of the symphony and composed as if they were writing in words. The tendency finds its most extreme exemplification in the tremendous works of Richard Strauss. New instruments, unheard of harmonies, the weirdest blendings of orchestral color, the increased orchestra—all are pressed into service by this tone-painter to set forth the slightest windings of the text, even down to philosophical quibblings of Zarathustra. To stem in a measure the tide of "programme music" was the object of the belated classicist Brahms with his reposeful serenity and studied unaffectedness. Through his efforts the symphony was in the year 1900 mainly what it had been at Beethoven's death. Germany's exclusive title to symphonic music was successfully disputed in the last quarter of the century by the north and east

of Europe: Grieg, Dvorák, Rubinstein, Rimsky-Korsakoff, Borodin and Tchaikowski (whose *Pathétique* is the most popular symphonic work of the day) gained rank by the side of the musical giants of the century. Chamber-music—that most intimate branch of the art,—and music for solo instruments, have undergone practically no change in the 100 years, except for the deepening of lines of expression. Chopin, aided by the progress of piano-making, gave piano-music its most idiomatic perfection, and the host of virtuosi with Liszt and Rubinstein in the lead made this branch of instrumental music the most popular and cultivated. The lapse of a century left its most noticeable traces in the development of vocal music, where individuality could naturally find most definite expression. The Oratorio as left in its final form by Bach, Handel and Haydn, found its greatest exponent in Mendelssohn. The polished eclectic struck a genuine dramatic note in *Elijah*, a masterpiece in its line. Since then the works of Tinel, Franck, Brahms, Gounod, and Verdi have proved lofty and great, but strongly tinged with staginess.

Opera.—It was in Opera that the century saw the most radical development, in consonance with the successive literary schools. The classical operas of Cherubini and Spontini were succeeded by the *cabaletta-cavatina* operas of Rossini, Donizetti and Bellini, which drove out all other competitors. However, in the *Barber* and *William Tell* Rossini who banished the *recitativo secco* produced masterpieces in musical comedy and tragedy. The romantic tendencies in Germany struck out in the intensely national operas of Beethoven (*Fidelio*), Weber (*Freischütz*, *Euryanthe*, *Oberon*), and Marschner. They were far ahead of the ancient models in the development of the orchestra and in power of depicting dramatic situations. Meyerbeer, with his imposing operas, rises in popular favor above all these, by his unerring feeling for theatrical effects, for which he presses into service pageantry, ballet, choral masses and novel orchestral effects. Of his school are Halévy, and finally Massenet, Saint-Saëns, and Reyer. The name that protrudes most boldly from the host of operatic composers is that of Wagner. Failing to find favor with music à la Meyerbeer, unyielding and supremely confident in his powers, he gradually diverted (through the *Flying Dutchman*, *Tannhäuser* and *Lohengrin*) to the doctrines which are known under the name of "Wagnerism," but really are a reassertion of the musico-dramatic theories of Gluck and the Spanish Jesuit Arteaga. Thus came into being the Wagnerian "Music-drama"—a union of poetic text, music, dramatic acting, painting and architecture, all conjointly lending their highest quota towards one harmonious effect. This "music of the future" requires a creative genius who is a poet, composer, dramatist, painter rolled into one. To make the music follow the text, set arias and ensemble numbers were discarded for "continuous melody" and "leading motives" were introduced to characterize the personages in various situations. The orchestra was given great prominence, so that symphonic music is quite as much a part of the music drama as is the actors' singing. The *Tetralogy*, *Meistersinger*, and subsequently *Tristan and Isolde* and *Parsifal*, given with utmost splendor at the specially built Wagner theatre at Bayreuth, inaugurated a new epoch. With the exception of Humperdinck's *Hänsel and Gretel*, Wagnerism has so far proved a failure as a school: it reduces itself to mere imitation. But its influence on all modern music has been enormous in the line of orchestral effects and the standard of librettos for operas. Equally important is the steady advance of Verdi from his Donizettian *Oberto*, through *Rigoletto* and *Trovatore*, to *Aida*, *Otello* and *Falstaff*, those choicest flowerings of Italian dramatic genius. The two other masters of the operatic stage are Gounod, a Meyerbeer plus sincerity and musical consistency,—and the theoretically Wagnerian Bizet, who combines in an unsurpassable manner the Gallic elegance, vivacity and feeling for orchestral picturesqueness with a profound dramatic genius. Extreme realism or "verism" found its musical exponents in the neo-Italian School of Mascagni, (*Cavalleria Rusticana*, a compound of incisive melody, southern passion and heart-rending tragedy), Leoncavallo, Puccini, Giordano, and Spinelli.

Lieder.—Where individualism found freest play was in the Song or *Lied*. Schubert with his overwhelming fount of melody, gave the world, both in quantity and quality, the finest specimens of the art-song. Under his hand the power of the poet's lyric was increased hundredfold by the perfect wedding of the text with the music. The greatest song-writers, with the exception of Franz and Abt, are found among the greatest composers of the century: Schumann, Mendelssohn, Liszt, Rubinstein, Dargomyzhski, Grieg, Jensen, Tchaikowski, Brahms, and McDowell. Whether "Wagnerism" will triumph over a milder form in the line of Verdi's latest creations, which sum up the traditions of three centuries of music from Peri, through Gluck, Mozart, Beethoven and Weber; whether programme music of the Strauss type or the sym-

phonic form sublimated in the manner of Tschaikowski's *Pathétique* or Dvorák's *From the New World* will win the day, remains a riddle to be solved by that supreme master—time.

PAINTING AND SCULPTURE.—In landscape painting rather than in figure painting has the greatest advance of the century been made. To France must be given credit for the greatest triumph, but Constable, an Englishman, was, oddly enough, the father of French landscape. Before we reach Constable and his influence in France, however, we must mention some painters of schools that preceded his. Here, too, it may be well to refer to the Englishman Turner, whose pictures, splendid though they were, did not induce his followers to study nature, as did the work of Constable.

David and Ingres were the earliest forces in the century among French artists, but they were daughtsmen rather than painters; form, line and composition pre-occupied them. Their methods were conventional. Not until the reaction of 1830 set in did indications appear of that pleasure in brushwork and pigment which characterizes the painter who loves painting for its own sake. The revolution against the pseudo-classic spirit which marked David and Ingres, took form in the Romanticists and gave France, among others, Delacroix and Gericault. Delacroix was a painter from love of painting, a strong colorist and of virile mind. He was influential in breaking down the barriers of the so-called classic school. Gericault was less moved by the traditions of the great painters of the past, the colorists of the English and Flemish schools, than was Delacroix, but his work had dramatic power and he, too, was a strong factor in the revival. The period when French art really burst its fetters was at hand. Delacroix, as has been said, drew his inspiration from some master who worked before him. Nature was not his mistress, nor the loving recording of her truths his first thought. But a later set of men, under the stimulus received from Constable, came to close quarters with nature; saw light and air, planes, surfaces and "values." Easels were transferred from dark studies to the roadsides, the forests, the seashore. A new world of beautiful visual facts was revealed to painters. This brings us to that great group known as the "Barbizon School," of which Rousseau, Troyon, Millet were the shining representatives. Corot, that lyrical landscape, was of this time. Millet's figures are perfectly wedded with the atmosphere they breath; he is a master of composition and of significant form. The new "sense of sight," has brought forth a school of "Impressionist" painters, indulging in vagaries of vision that are sometimes puzzling. One master in this new way of seeing, Monet, has contributed much to this latest phase of landscape art, and done much to clarify the palette of landscape painters generally. The "sense of vision" extended also to figure painters; Manet was one of the first to experiment in it and created a personal following.

The scholarly Gérôme and the masterly Meissonier may be perhaps placed among the more permanent figures of 19th century art in France. In portraiture, the brilliant canvases of Carolus Duran recall the best periods of painting, while the virile personalities presented by Bonnat may prove "human documents." Among the decorators Baudry suggests Raphael by his masterly drawing and unerring sense of composition; but as an influence Puvis de Chavannes, for his beautiful sense of mural fitness, primitive simplicity yet fine modern note, may, perhaps, be counted a greater force.

The Pre-Raphaelites of England, from about the middle of the century, imitated the simple, sincere methods of the early Italians. They sought to give with photographic exactness a form and detail of the minutest objects in nature. Rossetti, Burne-Jones, Holman Hunt and for a time Millais were of this group. Millais, however, soon branched out into a broader and more modern technique. Rossetti was the strongest colorist, Burne-Jones the most constant advocate of the principles of the school. Perhaps the most notable figure in English art of the past century is George Frederick Watts. He was somewhat like the Venetians in his manner of painting. His figures are marked by great sense of gesture and by noble demeanor. He is disposed to be didactic in subject. In portraiture Watts often shows noble characterization and a strong though a restrained note of color.

In America, the century saw a remarkable advance on the technical side of painting. The influence in this respect has been mainly French. During the last twenty-five years most of our artists have studied in France. The two most distinguished figures in the art of portraiture are Americans merely by parentage. Whistler, who has lived in London for many years, is an artistic temperament of rare quality. John Sargent, who has also chosen to live abroad, without perhaps possessing great qualities as a colorist, nevertheless stands in point of dexterity and technical address, unrivalled. Mr. Vedder, too, lives in Europe.

In America, as well as in France, the finest painting has been in landscape. In

George Innes, A. H. Wyant and Homer Martin, we have had three notable men. Inness was a painter of great impetuosity and force. Nature to him was full of mystery, but he did not ignore the fact that trees had bulk; clouds, modelling; and that the earth had structure and planes. His compositions were often noble, and he was the master of a rich and powerful palette. Wyant was more lyrical in his sense of the beauty of the earth; his work showed refinement of feeling and truth of color. Martin felt the tonal qualities in landscape and was happy in depicting the sense of spaciousness in earth and sky. Another painter who joins to his fine sense of landscape the interest of the human figure, humanly employed, is Winslow Homer. He lives much by the sea and the life of its toilers is often his theme.

Stained Glass and Decoration, are the branches in which there has been the greatest progress, after landscape. John La Farge has distinguished himself in both of these. In ecclesiastical mural decoration also, he is much employed. His work is marked by fine color and distinguished composition. Of our other painters who devote themselves to decoration, may be mentioned Blashfield, Simmons, Kenyon Cox, and H. O. Walker.

In Sculpture as well as painting, France has surpassed her sister nations. In 1800 the names of Canova and Thorwaldsen were perhaps dominant in plastic art. Canova was hailed as an artist who had rescued sculpture from the deplorable condition into which it had sunk since the Renaissance. His work was skillful, but measured by the standards of to-day is lacking in depth and dignity. Thorwaldsen, a Dane, was the second early light of the century. His taste was for mythological subjects, and from his hand also, we have the rock-hewn Lion of Lucerne. These sculptors, although they did much to revive the art, were fettered by tradition and it was for Rude, a Frenchman, to emancipate sculpture from the bondage of a cold and formal style. Rude, with a fine classical sense, introduced into sculpture the possibilities of freer action. Guillaume, Carpeaux, Falguière, Paul Dubois, Barye, and Rodin, form a cluster of stars that brighten the sky of French sculpture. Carpeaux showed a disposition to exceed the limitations of sculptured art by the exuberance of movement with which he invested his figures. His group of Dancing Nymphs, which ornaments the facade of the Grand Opera, illustrates this tendency. He was the precursor of a spirit which exists in France to-day. At the exposition of 1900 the French department of sculpture was marvelous for masterly presentations of the human form. Knowledge of this figure and of its possibilities in gesture and in action, seemed consummate. Many groups were, however, mere displays of the artist's structural knowledge of his figures. Exaggerated attitudes and violent movements, so temporary and transient as to suggest imminent change, were not uncommon. A markedly original personality, however, was found in Rodin whose works were separately exhibited.

The influence of France at its best has reached America. Many of our sculptors have received instruction there; some of the fruits of the knowledge thus acquired may be seen in St. Gaudens's Shaw monument in Boston, and in French's "Death and the Sculptor."

PHILOSOPHY.—In the later years of the 18th century Kant declared that logic had made no progress since the days of Aristotle. The remark would be absurdly false if made to-day. The advance has been general, affecting all lines of logical theory. The traditional logic has been thoroughly revised. The old mechanical way of looking at judgments as combinations of concepts, and at syllogisms as combinations of judgments has given way to the view that conception, judgment and reasoning are all mutually involved; that the same act of thought is either conception, judgment or reasoning according to the point of view from which it is regarded. This altered treatment of these logical operations has perhaps made the most striking difference in the theory of the syllogism. While *Barbara*, *Celarent*, *Darii*, *Ferioque*, still figure in the text books, they no longer form the backbone of the chapters on reasoning. More stress is laid on the organic growth of thought, or as it is technically called, on progressive intellectual synthesis. This change in the treatment of the syllogism was initiated by Hegel, who in his *Wissenschaft der Logik* (1812-16) submitted the traditional views to trenchant criticism with constructive results. Owing to the form in which he stated his doctrine, it has been greatly misunderstood, so that many recent writers who arrive at much the same results are yet disposed to ridicule the book in which these results were first given to the world. The next great work in this department was John Stuart Mill's *Logic, Ratiocinative and Inductive*, in which for the first time induction came to its own. Not that Mill made any new discovery, nor indeed that he can be credited with being the first to formulate the methods of induction which men of science had long been using. Hume, Herschell and Whewell had done that before him. Mill however seems to have been the first to recognize that the treatment of these methods belongs to the science of logic; and in this insight

he has been confirmed by every writer of prominence on the subject since the appearance of Mill's book. Other important names of the century in logic are Lotze, Jevons, Bradley, Bosanquet, Sigwart and Wundt. Some writers have made an attempt to reduce the operations of thought to algebraic formulation. In this endeavor Boole was pioneer, and has been followed by DeMorgan, Schroeder and C. S. Peirce. This algebra of logic is claimed by its advocates to be of "miraculous fruitfulness," but the claim is not generally allowed by experts.

In the theory of knowledge workers have been very active, though as yet no epistemological doctrine has come to be received by all. The old rival schools, however, no longer stand so far apart from each other. Empiricism has largely given up its atomistic view of the constitution of knowledge, and therefore its sole reliance upon association as the principle that consolidates the supposedly independent elements of experience into the unity of the mature cognitive consciousness. On the other hand the legal heirs of the older rationalism recognize more and more the importance of sense elements in knowledge. The main problems have been to get correct statements of the relations between thought and sense in knowledge, and between the knower and the object known. Here again Hegel is the point of departure for the movement of the century. His so-called Absolute Idealism was not an intellectualism which denied the claims of sense but was rather an ideal-realism, in which both sense and thought were recognized, not indeed as independent constituent elements, but, as implying the one the other. Perhaps Hegel's principle could best be stated thus: No sense without some degree of thought; no thought without sense. By thought he meant the appearance of elements of consciousness in relations, which can themselves become objects of a reflective consciousness, but need not do so. The point in this view which subsequent theory inclines to question is the assertion of the implication of thought in sense. In England the old associationist epistemology had the field till T. H. Green attacked it vigorously and with much success in his *Introduction to Hume*, but Green's constructive work in his *Prolegomena to Ethics* came in effectiveness far short of his destructive work. Edward Caird and others have done much to rescue the theory of knowledge from the disintegrating effects of Green's work, but their insistence upon an absolute unchanging consciousness as a precondition to the validity of knowledge seems rather to prejudice finite human knowledge. In Germany, Avenarius, Wundt and others have worked on a more empirical basis; but they join with the so-called English Neo-Hegelians in denying the ultimate dualism of mere psychic states and mere objective existences. The original datum of experience is recognized as an indecomposable synthesis of object-of-idea (*Vorstellungsobject*). Agnosticism, such as that of Herbert Spencer, has prevailed widely. It was a natural reaction against a metaphysics which presumed to know a reality existing behind and beneath, rather than in, phenomena.

In *Ethics* the individualism of the 18th century has been outgrown, thanks to the working of the principle of organic unity and to the doctrine of evolution. Hegel instituted the reaction by criticising both the contract view of the origin of morality and the view that morality is the dictate of an isolated reason. He based the moral life upon the social life as an objective historical fact. Comte, working independently, reached much the same result, which has now become the dominating factor in the ethical thought of the last forty years, under the influence of the doctrine of development. Herbert Spencer, in glaring contrast to the sociological and evolutionary tendencies of the time, has advocated a crude individualism, but without any considerable influence in this respect upon the scientific thought of the time. Leslie Stephen, Alexander, Wundt, Paulsen and others have succeeded in showing how morality is the outcome of the human constitution, instinctive, habitual, intellectual and emotional, under the circumstances under which that constitution has historically developed. Until late years, utilitarianism, or the doctrine that the greatest happiness of the greatest number is the supreme motive of the moral life, has had many adherents and has greatly influenced thinkers of all shades of opinion. J. S. Mill did most to give vogue to this doctrine; but at the same time he also unconsciously was the leader of a revolt against it, in recognizing a qualitative difference among pleasures. At present more stress is laid on the improvement of the objective conditions of human life as the concrete aim of human endeavor, and on the necessity of attacking all human problems in a spirit of fidelity to social ideals.

Æsthetics has shared in the general advance, and like ethics has become an independent science. Hegel's work in this line, though productive of much good in the way of stimulating inquiry, was too much controlled by his philosophical interests. On the other hand, careful study of classic, mediæval and modern art, anthropological and archæological investigation into the art and the artistic appreciations of primitive peoples, psychological study of the æsthetic consciousness, have resulted in the accumulation of a vast amount of material for the æsthetic scientist, and progress is making toward the construction of a theory that shall be true to the facts.

Metaphysics, or the science that attempts to discover the ultimate nature of things, has been very busy during the last hundred years. The old doctrines of materialism, spiritualism, idealism, realism, dualism, monism, and many others, have been defended and attacked, with a few quite generally accepted results. Materialism is no longer held by any reputable metaphysician, and is no longer tenable. Spiritualism, or the doctrine that all-experience is the output of an immaterial substance, has also been losing ground. Subjective idealism, such as Fichte's, which makes matter the result of the creative activity of a mind which antedates matter, finds few philosophical adherents. But the net results of the century's thought on metaphysics cannot now be estimated. When the contests now raging between idealism and realism, between intellectualism and voluntarism, between monism and pluralism, shall finally be brought to a close—and why should they not, if due regard to truth is the matter of supreme moment among thinkers?—it may be seen that many a decisive word in the dispute was said in the nineteenth century. At present it appears that the metaphysical achievement of the time has been not so much the winning of any positive result as the assuming of a more uniform attitude to the inquiry, less dogmatism on the one hand and more hopefulness on the other, and a growing recognition in scientific circles that metaphysics of some kind every thinker must have, whether he will or no—all this is a valuable legacy to the metaphysics of the 20th century.

RELIGION.—Considered from a Protestant religious standpoint the 19th century in most respects did not differ from the preceding century; but in three points it differed radically from all its predecessors. First, in that the Protestant church took on its world-wide importance; second, in that Jesus for the first time was recognized as a social leader by Jews, unbelievers and Christians alike; third, in that the Bible was for the first time subjected by reverent and believing scholars to the canons of literary criticism.

Growth of the Protestant Church.—When the century opened, the Protestant church was practically non-existent outside of Protestant lands. The only branch which was doing any foreign missionary work was the Moravian church. William Carey, the first Protestant missionary, had just begun his labors in India and the Baptist Missionary Society which supported him and five others in India had for its sister organization the London Missionary Society with two missionaries; the Society for Promoting Christian Knowledge had one mission in India; but there were no missionary societies in Protestant Germany, in America nor elsewhere. When the century closed, Protestant missions were found in every known land, and in the great strongholds of non-Christian religions they were well represented. At the Ecumenical Missionary Conference held in New York in April, 1900, 499 societies were reported, with 5,063 ordained foreign missionaries and 77,338 ordained and unordained native helpers (1830-1898). Among the great Protestant missionaries of the century were William Carey (1761-1834) in India, Robert Morrison (1782-1834) in China, David Livingstone (1813-1873) in Africa, Guido Fridolin Verbeck in Japan, John Coleridge Patteson (1827-1871) in the South Seas, Eli Smith (1801-1851) in Syria, and Adoniram Judson (1788-1850) in Burmah.

Christ as a Social Leader.—The Founder of the Christian religion has always been accepted by the Christian church as divine, but the doctrine of the deity of Christ has in every age found objectors, those who occupied an outside position have oftentimes spoken slightly of Jesus, and many of the so-called free-thinkers have boasted that they had nothing to do with him and that even what he said was not worthy of attention. But at the close of the 19th century his name was associated with every scheme for the betterment of men. Even by Hebrews, who can have no possible sympathy with the religious claims of Jesus Christ, he is quoted with great respect as a social philosopher and like one of their own rabbis. The Socialists also claim him for their own.

What have done most to bring about this change, strangely enough, have probably been those books which in the most objectionable way have analyzed the life of Christ as recorded in the gospels; viz.: those by David Friedrich Strauss (Tübingen, 1836, 2 vols.), Joseph Ernest Renan (Paris, 1863) and Karl Theodore Keim (Zürich, 1872, 3 vols.). These criticisms called forth very vigorous replies, most of which are entirely forgotten, but a few—especially such books as the *Lives of Christ* by Neander (Hamburg, 1837), Andrews (New York, 1862), B. Weiss (Berlin, 1882, 2 vols.) and Edersheim (London, 1883, 2 vols.) have survived as scholarly works. The presence of the Unitarian church with its denial of the deity of Christ has also been a factor because this church has been a leader in philanthropic movements and made much out of the example of Christ. The awakened study of the Bible, no doubt, has contributed to this end, because in this way the discovery has been made that Jesus had a great deal to say about other things than what would be called theology.

"Higher Criticism."—The old idea of verbal inspiration with its corollary, the accuracy of every statement of every kind made in the original text, has well-nigh

passed away, and in the place of it has come the general acceptance of the idea that no extant Hebrew or Greek text is an exact copy of the original autographs. They may have been wholly free from error but the existing texts are not. Along with this altered conception of the Bible has come a freer handling of its contents. The right of private judgment, which was so strenuously insisted upon by the reformers of the 16th century, has been again asserted and the canon of the Scripture has been sifted, with the result that several books are marked as dubious. The factors in this altered view of the Bible have been many. The study of comparative religion has brought out the general acceptance of the idea that there are many Bibles. The discoveries in Bible lands of texts and monumental inscriptions have shown a variation in some cases, in the way of dates, and some other statements from those in the Bible. So the same class of reverent students who at the beginning of the century had a superstitious reverence for the text have often accepted the radically different view that the Bible is like any other book, and has to be subjected to the same tests as any other book, with the result that its accuracy as a whole is denied, the alleged authorship of many of its books discarded, and its infallibility destroyed. The men who have done most to bring about this altered view are for the most part living, because the change has come within the last thirty years and was at the beginning the work of young scholars. But those of the dead who played a prominent part in this movement were such persons as Kuenen (1828-1891) in Holland, Reuss (1804-1891) in Germany and Bishop Colenso (1814-1883) in South Africa.

The Church of Rome.—The century witnessed in the Church of Rome three great events: the authoritative imposition of two doctrines, the holding of the first Ecumenical Council since that of Trent in the 16th century, and the ending of the temporal power of the Pope. The first doctrine was the Decree of Pope Pius IX. on the "Immaculate Conception of the Blessed Virgin Mary" i.e. by her mother St. Anna. This was promulgated on Dec. 8, 1854, by Pope Pius IX. on his own authority, though after holding a consistory of consultation. It thus commits the Roman church to a doctrine which had been rejected by the great theological authority of the present church, St. Thomas Aquinas (d. 1274) and which was a bone of contention between the Thomists, the followers of Aquinas, and the Scotists, the followers of Duns Scotus (d. 1308), and between their theological monastic confreres, the Dominicans and the Franciscans respectively. The Pope asserts that the doctrine was divinely revealed. The second doctrine was that of Papal Infallibility. It is set forth in chapter 4 of the "First Dogmatic Constitution of the Church of Christ" which is part of the *Dogmatic decrees of the Vatican Council* held in Rome in 1870, and is in these words: "the Roman Pontiff, when he speaks *ex-cathedra*, that is, when in discharge of the office of pastor and doctor of all Christians, by virtue of his supreme Apostolic authority, he defines a doctrine regarding faith and morals to be held by the universal church, by the divine assistance promised to him in blessed Peter, is possessed of that infallibility with which the divine Redeemer willed that his church should be endowed for defining doctrine regarding faith or morals; and that therefore such definitions of the Roman Pontiff are irreformable of themselves, and not from the consent of the Church. But if any one—which may God avert—presume to contradict this our definition, let him be anathema." (Dated Rome July 18, 1870.) The third event was the termination of the temporal authority of the Papacy. This was directly consequent upon the withdrawal of the French troops from Rome, as they were needed in the Franco-Prussian war which broke out the day after the proclamation of the papal infallibility. The absence of these troops enabled Victor Emanuel to carry out the plan of bringing all Italy under one government; and on Sept. 20, 1870, Rome was made the capital of Italy and the Pope's jurisdiction was limited to the Vatican. The proclamation of the papal infallibility dogma was followed by a revolt, which at one time bid fair to be formidable. This was the Old Catholic movement. But a negation is usually a narrow platform to stand on, and the movement has not grown beyond that. Whatever Rome has lost in that direction she has much more than made up by accessions from Protestantism. Shorn though the Pope is of temporal power his ecclesiastical authority is greatly increased.

According to Roman tradition St. Peter, the first pope, held the office for 25 years. It is remarkable that no pope had exceeded him in length of service up to the past century. Hence the supposition that no pope would do this. But Pius IX. reigned for 32 years and thus destroyed the fiction. At the end of the century the Church of Rome is still the largest body in Christendom, its missions were never so successful and its outlook was never so hopeful.

SOCIOLOGY.—The progress of sociology in the 19th century has been both theoretical and practical. As theory, sociology shows the development in our knowledge of the nature and character of the "social movement"—the process

by which man gets out of his egoistic shell and learns to co-operate with his fellow-man. Men share with one another the achievements of this process, and transmit its results chiefly through heredity. The secret of association once discovered, men develop institutions,—political, religious, industrial and æsthetic, the success of which demands from individuals coming within their scope a constantly increasing fund of altruism. As practice, sociology comprises the attempts to guide and artificially engraft the “social movement.” This is done by education in order to make wise choices and impulses of individuals mechanical and self-operative, and to counteract the natural consequences of unsocial choices. Thus we have the various aspects of social reform: (1) educational and suggestive, in which reclaimable but indifferent individuals are aroused to a social spirit; (2) charitable, in which those who are unfitted by reason of under-development, or the excesses of life, are taken care of through the outgoing of sympathy; (3) repressive and preventional, by which society protects itself from that which would destroy its very existence.

I. *The Theory of Society*.—It is no accident that Auguste Comte should have invented both the words *sociology* and *altruism*. The proper understanding of either term implies the other. Comte attempted a cosmic philosophy based on a hierarchy of the sciences in which social physics was the crowning synthesis of knowledge. Society was the natural outcome of natural forces; there was nothing artificial or man-made about it. Man gradually developed out of the stages in which he accounted for phenomena, physical or social, as the result of personal forces outside himself or as due to metaphysical entities. He gave up the search for causal laws and was satisfied to know something of the order of natural sequences and to adjust himself to them. Thus Comte outlined a general science of society based largely on physical analogies. He has had many imitators and followers, though the later discoveries in biology, as an outcome of the Darwinian epoch, have given the biological analogies in social phenomena the chief importance for that group of writers who trace their genealogy in this line. Among the prominent members of this school are Spencer, who formally dissented from the philosophy of Comte, Lillienfeld and Schæffle, and in this country Lester F. Ward. This group of writers includes by all odds the greatest number and most prolific of sociological specialists. They have appealed to the imagination of the public and have succeeded in arousing an intense interest in the problems of social evolution. They have not yet succeeded in building up a sufficiently well-knit body of knowledge to be worthy of a place among the sciences; nor have they succeeded in laying bare the social factor in human life. A much better beginning has been made in this direction in recent years by a group of sociological economists and jurists, chief among whom are Giddings, Patten and Tarde. All of these men have a better psychological method. Giddings has given us a social anatomy. He has traced the historical development of sociology from its primitive stages and has produced a good working scheme for the collection of scientific data and the ultimate working-out of scientific social laws. Patten has given us with wonderful originality and suggestiveness an analysis of social dynamics. He has traced the economic factor to the very beginnings of social institutions and social movements and has been particularly happy in his search for an objective formulation of social laws. Tarde with a similar method, and with Patten, in opposition to Giddings, has studied social phenomena in their concrete and individual manifestations. He proposes to explain the general from the particular, and not vice-versa. He traces the inter-agreements of minds and wills which form the basis of social life, to the effects of a “suggestive imitation” process which, starting from one primitive creature possessed of a single idea or act, passed the copy on to one of its neighbors and then to another, and so on. Thus laws of imitation are fundamental; laws of opposition account for the groupings of imitators; and finally laws of adaptation explain social struggle between imitating groups of imitators.

II. *Social Reform*.—It is not the successes of sociological theories that account best for the intense interest in sociology at the close of the century. It is rather to the exigencies of practice and the successes of practical efforts to attain “the social” that we must look for its chief justification.

At the outset, political reconstruction and freedom from the fetters of obsolete social institutions was the chief aim of the social movement. These efforts culminated in the Reform Act of 1832 in England, the somewhat later securing of universal male suffrage in most countries, and the constitutional liberalism of 1848 in France and Germany. The social movement in this period was for the most part fed on the Utopian and socialistic dreams of Saint-Simon, Fourier, and Robert Owen. Next came an economic movement for shorter hours of labor, sanitary protection, exclusion of women and children from factory work, educa-

tional advantages, reform of the poor law, the beginnings of labor organization, and coöperation.

The great philanthropic work of the seventh Earl of Shaftesbury, the reform in the public administration of charity led by Sir George Nichols, the doctrines of the Christian Socialists, Charles Kingsley and Frederick D. Maurice, and the foundation of coöperative societies for both the production and distribution of goods, led by such men as Ludlow and Holyoake in England, Leclaire in France, and a host of others elsewhere, the rise of the temperance movement, and the spread of great missionary movements are all characteristic features in the second and chiefly economic epoch of social reform in this century.

With the better organization of labor and the growth of capitalism and industrialism came the opportunity, in the third quarter of the century, for the development of a class socialism. This is usually known as the proletarian movement. Its early leaders were Blanc and Proudhon in France, Karl Marx and Lassalle in Germany. Proletarian socialism has evolved into a workingman's political movement in all countries, operating under different names, but usually known as the Social Democratic Party.

The last quarter of the century is remarkable in social reform for the increase in governmental activity, municipal, state and national, and for what might be called upper-class socialism or perhaps in some of its aspects identified with what is better known as state socialism or collectivism. The extension of the sphere of public business in sanitary legislation and in philanthropy and education is the most remarkable characteristic of the closing years of the century. The attempt to embody in legislation the most advanced social doctrines and remedies is especially noticeable in temperance legislation and prison reform, in the care of the degenerate classes, and in provision for the defective classes.

Notwithstanding the great strides in public measures for social reform, it is safe to say that the century has witnessed the greatest development ever known in private charity, philanthropy and humanitarian efforts. The charity organization movement alone, begun in England in 1869 and now thoroughly well established throughout Great Britain, the United States, and the chief centers of Europe, is perhaps one of the best illustrations of the intensity and vitality of private efforts.

III. Descriptive Sociology.—Having glanced at the theory and practice, we may conclude with a word about the materials for further advance. Description must precede good theory and sound practice. Notable among the achievements of the past century is the fact that governments now contribute thousands of volumes annually of sociological material, much of it of great value. The census of the United States, now requiring about twenty-five quarto volumes, the reports of the Departments of Labor and Education, both local and national in different countries, and the special collections of reports, such as those of the English Royal Commissions and special commissions in this country and elsewhere, are but a tithe of the public documents available for social studies. Of individual efforts, Mr. Spencer's monumental work, entitled *Descriptive Sociology*, is deserving of special mention: next to that comes Mr. Charles Booth's *Life and Labor of the People of London*. The reports of the American Bureau of Ethnology constitute a mine of rich material relating to primitive society, and the transactions of a large number of scientific societies should be mentioned. Westermarck's *History of Human Marriage* is perhaps one of the most valuable individual contributions to descriptive sociology as well as to theory.

ECONOMICS.—The history of political economy of the 19th century may be summed up in the achievements of the three schools which successively held sway in that domain: The Classical school, the Historical school, and the Austrian school, which with more justice should be termed Austro-American. Although Adam Smith wrote and died in the 18th century, his work is linked to the history of the science of the 19th, which opened under the spell of his name. The founder of the Classical school, living and writing on the threshold of the new order of things, expressed the need of the new era for freedom from the oppressive solicitude of paternal government and for unlimited scope of individual enterprise. As the herald of the coming industrial age he marked the reaction, in the theoretical field, against the Mercantilists who tended to confound wealth with the precious metals, and the Physiocrats who exaggerated the importance of agriculture, and exalted labor to the rank of the source of all value. It is this—the Labor Theory of Value—that constitutes the characteristic feature of the Classical or orthodox school. Two more names stand out prominently as the formulators and perfectors of this theory: Ricardo and Marx. The former put the theory of Rent on a solid and lasting foundation, which has not been shaken through the changes which have affected the science. He did it, not by overthrowing Smith, but by freeing the latter's theories from their own inconsistencies with the fundamental proposition of

gained over custom and judicial decision as agencies for the development of the law.

It would appear, then, that, notwithstanding the growing complexity of legal relations and the enormous increase in the volume of business transacted by the courts, the judiciary has lost much of its prestige and importance as compared with the legislative and executive organs of the government. Only one class of tribunals has escaped this tendency: those, namely, which have enjoyed the extraordinary power—unknown in older systems of law—of determining the validity of executive and legislative acts. This jurisdiction, existing mainly by virtue of the federal and state constitutions of the United States, has been built up by a series of judicial decisions extending through the 19th century, and fearlessly exercised for the protection of private rights against the encroachments of official power, constitutes one of the chief glories of that century.

Instances of Development.—Thus far only the general and external aspects of the legal developments of the age have been dealt with. The internal changes, dealing more directly with the rights which it is the province of the state to protect and enforce, have been not less significant and important. But these are so numerous that in an article of this character only the most general of them can be indicated. The humanitarian impulse of the century found legal expression in the wide spread movement for the abolition of slavery, as a result of which full rights of citizenship were conferred upon the slave population of Great Britain and the United States and qualified rights of a similar character upon the peasant-serfs of Russia. To the same impulse we owe the amelioration of the criminal laws, the general abandonment by civilized nations, of cruel punishments for crime, and the reduction of the number of offences punishable by death, as well as the abolition of imprisonment for debt and, in most jurisdictions, of the landlord's remedy of distress against a defaulting tenant.

The general improvement in the social position of woman has received legal recognition, in England and the United States, at least, in the gradual emancipation of the married woman from the control of her person and property by her husband; a process which has involved the loss of certain privileges—such as her right of dower, in some states—accorded to her by reason of her dependent status. The enormous increase in the number of divorces and the multiplication of trivial causes for divorce, would seem to indicate that this readjustment of the social relations of men and women is not without its threatening aspects.

The democratic movement of the century swept away the last vestiges of the feudal system of land tenure in this country and reduced that of England to the vanishing point, leaving little surviving even there, but the rule of primogeniture. It is to the growing strength of this movement, perhaps, as much as to the wave of industrial progress, that we must attribute the growth of a new law of employer and employee, based on free agreement, in the place of the old law of master and servant, as well as the legal recognition of the right of combination on the part of the employed and, in some instances, of something in the nature of a vested right to fair wages and decent conditions of life. The last example represents a tendency—the reaction from the extreme individualism of the industrial movement—which belongs rather to the 20th century than to the 19th, but which has already found legal expression in laws for the better housing of the poor, in searching sanitary regulations, and in various provisions for old-age and industrial pensions and the public employment of the unemployed.

Reform.—Most of the changes in legal relations which have been described were the unconscious results of forces working deep within the structure of modern society. But there remains to be mentioned one change of far-reaching importance, the result of a deliberate effort at amendment of the law—the reform of legal procedure which took place during the last half of the century both in England and in this country. That this reform was rendered necessary by the great pressure of litigation which came in upon the courts under the influence of the industrial movement, does not detract from the merit of the change and but enhances its importance. By consolidating and coördinating the tribunals, simplifying and cheapening procedure, and bringing its processes into the light of common day, the business of the courts was expedited and justice brought within the reach of all. It may well be that when the new century comes to cast up its indebtedness to the old, it will reckon the reform of legal procedure as the most important item in the legal account of its predecessor.

COMMERCE AND INDUSTRY.—The chief material cause of the marvellous development of commerce and industry in the 19th century was the general application to machinery of power outside of nature's original forces, such as muscle, wind and water. First steam, and later electricity, have greatly multiplied the productive and distributing agents of the world. It is not merely the increase

in available power that has done this. The adaptability of electricity and other forms of energy to the various needs of industry and commerce, have played their part in the progress of the century.

The Introduction of Steam and the consequent development of large establishments devoted to the manufacture of a single product has resulted in the division of labor, a change which not only in its industrial, but in its social and intellectual effects has been of radical importance. Along with the division of labor has come shorter hours, higher wages, a greater degree of intelligence and efficiency among skilled laborers and a broader line of separation between skilled and unskilled labor. The division of labor and specialization of industries has, in turn quickened commerce, for when not only the individual, but the whole community or cluster of communities is engaged in a special industry, it is dependent upon the rest of the world for every other necessity, and hence the interchange of commodities is constant, rapid, and general.

The Patent System.—Another feature of the past century which has had an incalculable effect upon industry is the development of the patent system. Previous to this century the great inventions had been made at long intervals, by men of uncommon genius, who often suffered before their work was appreciated. But with the evolution of the patent system, invention became a means of earning a livelihood and perhaps fame and fortune. In 1790 less than 10,000 patents had been issued by the civilized nations of Europe and America. At the close of 1900 Spain had issued 23,953 patents; Italy, 54,455; Austria-Hungary, 87,184; Germany, 134,875; Belgium, 161,786; England, 289,079; France, 320,534; United States, 674,783.

The Development of Verbal Communication by means of the land telegraph, the submarine cable, the telephone, and the press, has been at once a cause and effect of the growth of commerce and industry. The diffusion of knowledge, through papers and books creates wants and at the same time the knowledge of where they can be supplied. The knowledge of distant markets, quick ordering of goods, and other benefits resulting from ease of communication make it one of the essential factors that have produced the present commercial and industrial status.

The extensive employment of steam as a motive power and most of the improvements in its application, were the work of Englishmen and Americans. Most of Watt's improvements were made during the last quarter of the 18th century, but the general application of steam in manufacturing dates from the beginning of the 19th century, when the change from household industries to manufacture in large factories began. The chief physical necessities of civilized man are Food, Clothing, Furniture and Utensils, Heat and Illuminants. Probably more changes in the method of producing these have taken place in the last century than in all the preceding ages. In Food-Stuffs, the great inventions have been the rolling mill, the purification of middlings for flour, the invention of vast numbers of agricultural machines, and the cold storage and canning process for preserving and shipping perishable food products.

For manufacturing cloths a series of remarkable inventions have been made. At the beginning of the century, the spinning jenny of Hargrave and the inventions of Arkwright were generally known, and in 1787 Dr. Cartwright had invented his loom to be run by machine power. The invention of Jacquard for pattern weaving was made in 1801 and at once revolutionized the textile fabric industry. Pattern weaving was not adapted to carpet looms till many years later, and it was not till about 1840 that Erastus Bigelow, of Lowell, Mass., constructed the first carpet loom that was operated by any force other than human muscle. Since that time improvements in the methods of spinning and weaving have been constantly made, including Lyall's positive motion loom, and culminating in the Northrup loom, which works with precision and delicacy almost human.

The discovery, in the fifties, of aniline dyes by Perkins has added greatly to the variety of textile products, and the invention of the sewing machine by Elias Howe, in 1845, has done much to increase the use of those fabrics. The discovery of the process of vulcanizing rubber, in 1831-40, by Charles Goodyear added that staple to the list of the world's materials. Thirty years later the shoe-sewing machine invented by McKay revolutionized the shoe industry. The development of the cotton industry is far greater in volume and importance than that of any of the other textile fabrics. The number of spindles in factories in America in 1790 was only 70. A hundred years later there were 14,188,103 spindles and 324,866 looms, and at the close of 1900 there were 21,057,983 spindles and 400,398 looms, an increase of about 50 per cent. in the past ten years alone.

In 1800 the price of cotton yarns varied from \$1.03 to \$1.36 per pound. It now ranges from 13½ to 18½ cents. In 1900 Great Britain alone exported 5,034,250,600 yards of cotton, and when we remember that every pound of cotton from which

this cloth was made was first imported from regions thousands of miles distant across seas, the amount of commerce involved in the transaction becomes apparent. In the United States the exports of cotton cloth have increased during the last decade from 130,000,000 yards to 250,000,000 yards.

Iron.—No metal, indeed no natural product, is so essential to all the arts and industries as iron, and the last century contains a long list of improvements in the process of manufacturing and utilizing this invaluable material. The employment of the hot blast by Neilson of Glasgow in 1830 was one of a series of inventions which revolutionized the modern process of iron manufacture. The greatest of these inventions was the Bessemer process for the manufacture of steel, patented in 1855. It was not till 1864 that the manufacture of Bessemer steel was begun in the United States, an innovation which has reduced the cost of steel from seven cents to less than one cent a pound. Various improvements of the Bessemer process have contributed to the lowering of the price of steel, one of which is the continuous process of manufacture performed in one immense factory in which the raw material enters and, without handling, emerges a finished product; the magnitude of the production being essential to its cheapness. Within the past five years the open hearth Siemens furnace for manufacturing steel has been rapidly gaining in favor and it is predicted by Mr. Andrew Carnegie that this method will in time supersede the Bessemer process. Its great advantage in the United States is that ore abounding in phosphorus, of which this country produces enormous quantities, and which cannot be made into Bessemer steel, can be utilized in this new process.

Among the minor articles that have been invented within 100 years but that are now indispensable are friction matches and pins, dating from about 1830; and the typewriter first constructed in 1873.

Of the various illuminants now in use, only candles and the most primitive of oil lamps burning vegetable oils, were known 100 years ago, the modern oil lamp being introduced into England from Germany as late as 1856, or about the time when coal-oil was first discovered in the United States. Gas was first employed to light a portion of Paris in 1802, after various preliminary experiments in private dwellings. The first successful attempt to employ gas for lighting in America was made in 1821, in the city of Baltimore. Within the past decade the cost of manufacturing gas has been greatly reduced, and its popularity has been increased by the introduction of the incandescent mantle. The first electric light was made by Sir Humphrey Davy in 1809 at the Royal Institute in London. The first incandescent electric light was made in America by Prof. Grove in the thirties before the introduction of illuminating gas into this country, but the modern incandescent electric lamp was introduced by Edison in 1880.

Methods of Heating have undergone as great a change as methods of lighting. The Franklin stove came a little earlier than the beginning of the century, but wood was the universal fuel at that time for domestic purposes. In 1803, 100 tons of anthracite coal were brought from Summit Hill to Philadelphia and were sold to the city government for use in the pumping works, but the engineers did not know how to burn it and it was broken up to make walks. The anthracite coal industry has sprung up, largely, since 1860, the entire amount of coal shipped previous to that time amounting to 83,835,841 tons, while for the year 1895 it amounted to 46,545,760 tons. In 1899, 53,382,644 tons of anthracite and 166,592,023 tons of bituminous coal were produced.

Printing.—In 1805 Louis Robert, of France, perfected his machine for making continuous webs of paper, an invention which made the modern printing press possible. In 1804 König, of Saxony, came to London with an improved press, printing on a flat surface with rotating cylinders; this press was adopted by the London Times in 1814. In 1827, Isaac Adams, of Boston, developed the press known by his name, an improvement of the König press, which was used for many years. In 1845 the Hoe Co. brought out their type revolving machine printing 8,000 papers an hour; in 1871 the continuous web press was invented by the same company, in which paper is furnished to the press in a continuous roll. Devices for cutting, folding and counting papers have since been added, culminating in the great Hoe octuple press which prints, cuts, pastes, folds, and counts 96,000 papers in an hour. The latest important invention in connection with the printing press has been color printing. The art of stereotyping, which though invented in 1731, was made practicable by the Earl of Stanhope in 1804, has had an important effect upon the development of the art of printing. The linotype machine, patented in 1885, is the last and perhaps most important invention of the century, connected with the art of printing, as it substitutes for the slow, laborious and expensive process of hand type setting, a mechanical arrangement which both sets and casts the type, the operator simply fingering a keyboard somewhat as in the typewriter. The process of making paper out of wood pulp, invented by Henry

Voeltner in 1860, has had an important bearing upon printing, and has resulted in greatly cheapening books and periodicals. Previously paper had been made out of cotton fiber, and when the supply of rags fell short they were mixed, with indifferent success, with straw and fibrous grasses.

The growth of the commerce of the world has kept pace with the growth of industries, and both have been stimulated by the spirit of exploration and colonization which has characterized the century. In this period the production of raw materials and the demand for manufactured articles to be sent to all parts and all peoples of the world has wonderfully increased. At the beginning of the century the foreign commerce of the United States, including both exports and imports, was valued at \$162,222,548. For the year 1900 the exports alone amounted to \$1,394,186,371, and the total commerce to more than \$2,000,000,000. Add to this the inland commerce over the navigable lakes and rivers, and the railroads, and we have a sum total of enormous size. An attempt to estimate the commerce of the world would be so inaccurate as to be of little value. The foreign commerce of Great Britain for 1900 was about \$4,500,000,000. As a large percentage of England's exports were first imported, in the form of raw materials from all over the world, the extent of her commerce is of general interest. For the past three years it has been as follows:

	1898	1899	1900
Imports.....	\$470,344,702	\$485,035,583	\$523,633,486
Re-exports.....	60,654,748	65,042,447	63,099,288
Exports of British produce.....	233,359,240	264,492,221	291,451,306

A more detailed table of the foreign commerce of the United States is as follows:

IMPORTS

	1899.	1900.
Articles of food and live animals.....	\$229,977,787	\$210,329,205
Articles of food in a crude condition for domestic industry.....	267,567,860	280,359,404
Articles manufactured for use in mechanic arts.....	75,387,687	84,785,196
Articles manufactured ready for consumption.....	118,364,400	132,443,646
Articles of voluntary use, luxuries, etc.....	107,669,676	112,101,886
Total imports.....	\$798,967,410	\$829,019,337

DOMESTIC EXPORTS.

Products of agriculture.....	\$782,133,405	\$904,658,958
Products of manufacture.....	380,787,891	441,406,942
Products of the mines.....	33,279,187	39,222,902
Products of the forest.....	47,562,121	54,481,146
Products of the fisheries.....	5,637,077	8,074,684
Miscellaneous.....	315,326,663	5,169,027
Total domestic exports.....	\$1,252,932,344	\$1,453,913,659
Foreign goods re-exported.....	22,535,627	24,936,007
Total exports.....	\$1,275,467,971	\$1,477,949,666

Converted to American money, the British imports in 1900 were about \$2,550,000,000, or three times those of the United States, while the British domestic exports were about \$1,419,000,000, or slightly under those of the United States.

COMMUNICATIONS.—The application of steam to transportation, the electric telegraph, and the telephone, are the particular contributions of the 19th century to the means of communication between persons and places. At the beginning of the century the stage coach and cart, the canal boat, and the sailing vessel were the only means of transportation and communication, and during the next 25 years effort was devoted to their development. For another quarter of a century the steamship was struggling with the sailing vessel on the ocean, and railway and canal were contending in internal transportation. Not until the middle of the century did steam transportation obtain a recognized lead. In 1900 the commerce of the world was carried in steamships and railway trains; the highway, the canal, and the sailing craft still occupied an important position in the world's transportation system; but it was a tributary position.

The first actual use of the locomotive was on the Stockton & Darlington railway in England in 1825. Five years later it was applied on a large scale for handling general traffic on the Liverpool & Manchester railway. Railways were com-

menced in France in 1833; in Germany in 1835, and in Russia in 1835-7. Thence they spread throughout Europe and were carried into Asia, Africa and Australia. In 1900 the Trans-Siberian railway was almost completed to the Sea of Japan. In the United States the railway had an independent development and one of even greater magnitude. The first railway in the United States was completed in 1830. Five years later there were 1,098 miles in operation along the Atlantic coast. The westward advance of these lines reached Buffalo, N. Y., in 1842; Chicago, Ill., in 1852, and the Pacific coast in 1869. In 1900 there were in round numbers 195,000 miles of railway in the United States. From the United States grew the railways of Canada, Mexico and Central and South America.

Development of the cheap handling of freight has been extraordinary. When railways were first built it was supposed that they would find their chief occupation in the handling of passengers and local freight; that they should handle long distance freight, that they should create new industries, or that they should compete effectively with water routes was not expected. Indeed, not until 1850 did these possibilities dawn upon railway managers. Gradually the principle of making rates to develop traffic, or charging what the traffic would bear, was developed. The freight rates of 1900 were but a fraction of those of 1850. Cars were increased in capacity to 30,000 lbs., 60,000 lbs., 80,000 lbs. and 100,000 lbs.; locomotives were increased 50 per cent. in weight and three-, four- and even five-fold in hauling capacity, and each of these changes cheapened the cost of transportation.

In *Steam Navigation* we notice a development nearly as great as that of the railway. The first steam vessel crossed the Atlantic ocean in 1833. In 1843 came the change from wooden to iron hulls; in 1850 paddles gave way to screws; in 1856 single engines were succeeded by compound engines; in 1879 iron hulls gave way to steel hulls, and in 1889 the single screw was followed by twin screws. As estimated by a recent writer, the capacity of the world's tonnage of ships to carry freight and passengers has increased fifteen-fold in a hundred years. The growth in the size and speed of vessels from 1840 to 1900 is shown by the following figures:

		Knots	1855	Tons
1840	<i>Acadia</i>	9	1845	"
1848	<i>Canada</i>	10½	2860	"
1850	<i>Atlantic</i>	12	3870	"
1862	<i>Scotia</i>	13	3888	"
1871	<i>Adriatic</i>	15	8144	"
1880	<i>City of Rome</i>	17	20,600	"
1891	<i>New York</i>	20.7	12,950	"
1893	<i>Campania</i>	22	14,349	"
1897	<i>Kaiser Wilhelm der Grosse</i>	22.62	15,500	"
1900	<i>Deutschland</i>	23 36		

The ocean freight on a ton of wheat from New York to Liverpool was in 1868, \$5.75; in 1884, \$4, and in 1900, \$1.90. The passenger fare on the steamship *Great Western* from New York to Bristol in 1838 was \$150 and the voyage lasted 15 days; in 1900 better accommodations could be had for \$30 and the voyage lasted eight days.

Written Communication was possible only by post during most of the first half of the century. In 1839 the electric telegraph was established in England and in 1844 in the United States; the telegraph service of Germany dates from 1849 and that of France from 1851. In 1858 the first trans-Atlantic telegraph cable was laid and in 1900 there were nearly 200,000 miles of submarine lines. In 1877 the telephone was first used in the United States, and in 1900 the telephone exchanges of the world numbered thousands and their subscribers millions. A recent writer summarizes the present condition of electrical communication in regard to rates of transmission as follows:

	60 Words Per Minute
Telephoning.....	15
Single Wire Circuits.....	30
Duplex ".....	50
Quadruplex ".....	80
Multiplex ".....	125
Wheatstone Automatic.....	200
" Duplex.....	10
Wireless Telegraphy.....	"

In less than a hundred years, therefore, steam transportation and electrical communication have become controlling factors in each man's private business and in the public policy of nations.

HISTORY

UNITED STATES.—The opening of the 19th century coincided with the beginning of a definite epoch in the history of the United States, marked by the election of Thomas Jefferson to the presidency. Between 1789 and 1800 there had been a struggle between principles of which Jefferson and Hamilton were the leading exponents. Should the Constitution be read so as to make the central government a real sovereign, or merely a limited agent of sovereign states? Should the upper classes or the whole people control the central government? These were the issues upon which the two parties differed. Under Washington and Adams the former view of the Constitution had prevailed and the federal government, under the guidance of Hamilton, had been active in exercising its express constitutional functions and in developing implied ones. To Jefferson and the strict interpreters of the constitution, such acts as the creation of the Bank of the United States, or the summoning of the state militia of Pennsylvania by the president in 1795, seemed attacks on the rights of states and on the liberties of the common people, which Jefferson believed to be grounded in the states. Hamilton and the Federalists regarded Jefferson as a demagogue and deemed his followers riff raff. The fear of them led the party in power to measures which seemed to justify Jefferson's view that a strong central government was but a stepping stone to a monarchy. The Alien and Sedition laws, the extreme statement of Federalist principles were met by the Virginia and Kentucky Resolutions, the statement of the Republican position. At the polls in 1800, the Federal party was annihilated.

After the election, Jefferson's official conduct was not in strict accordance with his former views concerning the power of the central government. In purchasing Louisiana, as he himself admitted, he strained his authority to the utmost. The only defence he could make for the act was its "necessity." The defence indicated that the Republicans were swinging over to the Federalist position; and, indeed, from the time of Jefferson to that of John Quincy Adams, the absorption of Federalist principles by the Democratic party steadily continued. The influence of what was then the west was chiefly responsible for this development. The inhabitants of the states beyond the Alleghanies belonged naturally to the party of the plain people, the Democratic party. Free, however, from the spirit of local jealousy that marked the inhabitants of the original states, they were proud of the federal union and willing to see its national powers extended. The rank and file of the party, and a new generation of Democratic politicians forced the administrations to adopt wider views of constitutional rights. The fear of a military despotism had led Jefferson to maintain the army and navy in a state of inefficiency, and in the quarrel with England to exercise all means of peaceful retaliation rather than go to war. Madison, too, during his first administration, followed a similar policy; but to the young leaders of the Democracy, like Clay and Calhoun, the policy of embargo and non-intercourse acts seemed as disgraceful as it was ineffectual; and they were powerful enough in 1812 to make the declaration of war against England, a condition of Madison's renomination. The outcome of the war tended to strengthen pride in the nation. With the passing of the Hartford Convention, the last element of disunion vanished and it was generally recognized that the Monroe Doctrine was spoken by the head of a nation rather than of a loose confederation of states. In domestic affairs too the growth of the federal government's power was strong. The United States Bank, which Jefferson had opposed and Madison disliked, was re-chartered nevertheless in 1816. The policy of imposing protective tariffs began in Monroe's time and became definite under John Quincy Adams. The right of the nation to undertake a system of internal improvements was denied by Monroe, but Monroe's successor, in his message to Congress, strongly recommended the beginning of a national internal improvements and initiated the system successfully on a large scale.

The Tariff.—The period after 1815, however, was not one of simple development along the line of federal consolidation. Parallel with the national movement there ran, after 1820 especially, a movement towards decentralization, which was destined to become a formidable danger to the Union. Jealousy between state and nation based on political facts, was gradually superseded by jealousy between sections based ultimately on economic facts. The Missouri Compromise was the first indication of an existing and growing antagonism between north and south. The disputes over the tariff laws of 1824 and 1828 deepened the hostility. Before the war of 1812, the south, out of patriotism, had consented to protection, and New England out of interest, being a commercial

region, opposed it. After 1820, New England having become a manufacturing centre, believed in protection, while the south, a producer of raw material only, held it inexpedient. The tariff of 1824 had favored New England to the discontent of the south. The tariff of 1828 was held still more oppressive by the southerners, who insisted that virtually the agriculture of the south was being taxed for the benefit of the northern industries. And as the south, being at the time deemed an agricultural region, and moreover hampered in manufacturing by its "peculiar institution," slavery—for the slaves were not supposed to be capable of caring for machinery—did not hope to develop manufactures, therefore the conflict between the two sections, in its last analysis was one of free labor against slave labor. Calhoun, the most far-sighted of southern leaders, had foreseen the struggle, and recognizing the fact that in time the north must come to surpass the south in wealth and numbers, sought a defence for the threatened interests and institutions of the south in the teachings of Jefferson as contained in the Virginia and Kentucky Resolutions. The doctrine of state sovereignty which regarded the federal government as the mere agent of the states, appointed by a compact among them and subject to their commands, was proclaimed in the Senate by Hayne and was answered by Webster. The strength of the southern contention lay in the historical fact that the federal government had been created by independent states for a common purpose. But what Calhoun and Hayne failed to recognize was the growth of national feeling during 40 years. Whatever the framers of the Constitution might have intended, the fact was that to the vast majority of the people in 1830, the United States was more than a federation of sovereign states. Webster formulated the public opinion of the north and west and a majority of the south. Resting upon the theory of state sovereignty, South Carolina, in 1832, declared null and void a tariff law passed by Congress, and threatened secession if force were used against her. Decisive action on the part of President Jackson prevented the outbreak of hostilities, and a law providing for the speedy reduction of the tariff induced South Carolina to retreat from her position. Though termed a compromise, the settlement of the dispute, as Calhoun asserted, was a victory for South Carolina. A state had forced the nation to come to terms, the doctrine of state supremacy had been successfully reasserted. In the struggle between north and south which had now become quite apparent, the southern leaders had gained a powerful weapon. The threat to break up the Union was found for thirty years an efficacious means of wringing concessions from the north.

In Monroe's administration there were no political parties. During the administration of John Quincy Adams there were merely personal factions. Only after 1828 did the Whigs, led by Clay and Webster, arise, as distinct from the Democratic party. On the question of state versus nation, raised by Calhoun, the Whigs stood for a strong federal union, and in general their principles were those of the old Federal party. The Democrats showed a tendency to deviate from the broad constitutional views they had adopted, but held, nevertheless, to the integrity of the Union. The strength of the party was still in the west where the national feeling was active. On the question of slavery the parties did not differ, for as yet the problem of slavery had remained disguised under the form of tariff struggle and nullification. The rise of the abolitionists, however, brought the question before the country, and ultimately before Congress. The fight for the right of petition, carried on in the House of Representatives by John Quincy Adams served to force it in the end on the attention of the political parties. From 1829 to 1841, however, it was not principles but the personality of Andrew Jackson that dominated politics. From 1801 to 1829 the character of the presidents had been such as to make the government one for the democracy rather than of the democracy; but in Andrew Jackson the people of the west sent one of their own number to the White House. Strong in his own convictions, and in the support of the masses, he scorned to follow the customary paths of foreign or internal policy. His exceedingly undiplomatic conduct brought France and Portugal to terms on the subject of disputed claims. In his attack on the United States Bank, he showed himself energetic, and unscrupulous where he thought he was right. His masterful course toward South Carolina prevented immediate conflict. Incidentally, with Jackson there came definitely into American politics the spoils system. The members of his "Kitchen Cabinet" worked on the president's passions and ignorance for their own ends, and the astute Van Buren introduced into national affairs the art of wire pulling which he had mastered during his political career in New York. The favor of Jackson made Van Buren president in 1837, but it was the latter's misfortune to bear the odium of the evil results of Jackson's financial policy. The one great measure of his administration, the establishment of an independent sub-treasury, could not wipe out the dissatisfaction which his predecessor's

acts had created. After 40 years of unbroken ascendancy the Democratic party was driven from office by the Whigs.

Slavery and New Territory.—The triumph of the Whigs, however, was in no way decisive. They had come into power on the strength of Harrison's name. The death of the president put Tyler, who was more of a Democrat than a Whig, into office. Of the most important features of the Whig platform, the questions of internal improvements and protective tariff had received a set-back under Jackson and Van Buren, and now the question of the national bank received its quietus from Tyler. On the question of slavery which became the predominant question between 1840 and 1860, the Whigs took no definite stand. The Democratic party, on the contrary, now under control of the south stood openly for slavery. In the struggle waged by the Abolitionists before 1840 over the right of petition and the right to send their literature through the mails, the bulk of the party was certainly with the south. After 1840, its sympathy developed into aggressive activity. The answer of the south to the challenge of the Abolitionists was the vigorous initiation of the policy of territorial expansion, undertaken for the purpose of spreading and strengthening slavery. Of the execution of this policy the Democratic party, dominated by its southern wing, became the instrument. The northern members of the party were frightened into coöperation by threats, more or less open, of the dissolution of the Union. Against the advance of the Democrats, therefore, the patched up platform of the Whigs could not hold out.

Texas, a republic since 1836, inhabited mostly by American pioneers, afforded a field for expansion. Its geographical situation insured, of course, the establishment of slavery there. Out of its immense area a number of states might be carved to balance the south against the north. As early as 1836, Calhoun had declared that Texas was necessary to the south, and in 1837 a proposal for annexation had been made by the Texas authorities, but had been put aside by Van Buren owing to the feeling in the north that annexation would mean the enhancement of the slave power. In Tyler's administration the question was reopened, and in the campaign of 1844 the Democratic party declared for the annexation of Texas and, to gain the support of the north, for the reoccupation of Oregon. It was evident that the admission of Texas would bring on war with Mexico and on that ground the Whigs opposed the measure. Upon the issue of annexation the Whigs were defeated. 15,000 Abolitionist votes drawn mostly from the Whig ranks gave the State of New York and the election to Polk. Texas was annexed in 1845. In 1846 General Taylor took possession of the territory between the Rio Grande and the Nueces, claimed by Texas and Mexico, and when the latter resisted, Congress declared that a state of war existed between the United States and Mexico. Events moved rapidly enough. It became clear that Texas was to bring in more than its own territory, to aid the southern cause. The north grew alarmed. In the House of Representatives Wilmot of Pennsylvania moved, in 1846, that slavery be excluded from all territory acquired from Mexico. The motion was passed by the House, but failed in the Senate. Upper California and New Mexico were acquired unconditionally, and what the intentions of the south were in regard to the new possessions might have been gathered from the new principle laid down by Representative Rhett of South Carolina in 1847 that Congress had no right to restrict slavery in *any* territory of the United States.

The discovery of gold in California peopled that region within two years and its application for admission to the Union brought up in practical form the question of slavery in the conquered territory. A direct solution was evaded by the Compromise of 1850—the most important victory the south had as yet gained. In admitting California as a free state, no concessions had been made for in the nature of things California could not have been anything but free. In wringing the Fugitive Slave Law from the north the nation was committed to the support of slavery. The "peculiar institution" had become legalized in north as well as south. Whigs and Democrats, in 1852, proclaimed the finality of the Compromise, but in reality it was but the beginning of the last stage in the contest between the sections. In the north bitterness of defeat and scruples of conscience over acknowledgment of slaver power rankled. In the south the elation of victory drove men to reckless bounds in furthering the spread of slavery. Enjoying the guarantees of the United States Constitution and the right of spreading south of 36° 30' in the territories, slavery had only to cross that line set in 1820 to be victorious at every point. Mr. Douglas's Kansas-Nebraska Bill afforded the opportunity. It was made a distinctively southern measure. In the House, and more emphatically in the Senate, it was the southern wing of the Democratic party, dragging along half of the northern wing with it, that repealed the Missouri Compromise. The civil war in Kansas that followed the

adoption of the Kansas-Nebraska Bill was but a prelude to the great Civil War that was soon to convulse the nation. It was seen that conflict was unavoidable. The Whig party fell to pieces and was succeeded by the Republican party made up of Free Soilers, Whigs and Know Nothings, united in opposition to the extension of slavery to the territories. In 1852, when people hoped for the efficacy of the compromise, the votes polled by the Free Soil party had shown a decline of 50 per cent. from those polled in 1848. In 1856, after the repeal of the Missouri Compromise, Fremont polled 1,340,000 votes and was defeated by 5,000,000 votes. In 1860, after Chief Justice Taney had declared that slavery as property could be protected in the free territories, Lincoln was elected by a majority of one-half a million votes over Douglas, the candidate of the Democratic party. The faction in the south that had declared that the election of Lincoln would be the signal for the dissolution of the Union acted on their word. The loyal element, large in all states, predominant in some, was overriden by the extremists. Jefferson's theory of State's Rights, developed by Calhoun into a theory of state sovereignty, became a reality and was put to the test of battle.

Results of the War.—The doctrine of state sovereignty was annihilated by the Civil War, and the Constitutional changes which followed it modified the relation between the states and the federal government in favor of the latter. During the war, necessity had been made to justify the exercise of extra-Constitutional power by the president. After the war, expediency led to the adoption of the amendments. For the protection of the liberated negroes the authority of the United States was extended so as to embrace matters that formerly had been the concern of the state alone. And in spite of the refined distinction drawn by the Supreme Court between federal intervention in state affairs *ipso facto* and federal intervention for the protection of the United States citizens, facts showed plainly that the national power had made large advances at the expense of state authority. War had established not only the effectual integrity of the Union, but also the supremacy of the nation to the state, whenever the interests of the two came into contact. The problems that confronted the country after reconstruction were in the main not constitutional, but legislative. The wonderful economic development of the country after the war made the money question and the tariff question the leading issues. These subjects, as well as those of civil service reform, immigration and interstate commerce, were naturally within the scope of the authority of Congress, but the frequent demand made upon the federal legislation on the subject of trusts, for instance, indicated the general tendency towards the national government for laws that should be more effective because more general. The precise effect that acquisition of extra governmental territory would exert on the powers of the federal government, events at the end of the century could not clearly show.

EUROPE IN THE 19th CENTURY.—The history of the 19th century was determined by the events of the last decade of the 18th; largely by the French Revolution. That outburst had brought forth beautiful ideals. In the nature of things these ideals were not at once realized; for they had shot up too swiftly. They fell; but their inspiration and the causes that had made them, endured. Individual, people, nation,—these are the political concepts which the Revolution created and our own times saw realized. The 18th century knew little of them. Then there were no men or rights of men, but feudal classes and class privileges; no peoples, but governments, bureaucracies and standing armies; in central and eastern Europe, no nations, but aggregate territories held together by dynastic bonds, or slices of land passed, with masses of inhabitants, from hand to hand. Feudalism and absolutism were overthrown by the Revolution. Its work was perpetuated and completed by the succeeding epoch, which witnessed the growth of the European democracy, the birth of nations, and the rise of economic conditions that powerfully influenced both.

The beginning of the century coincided with the beginning of Napoleon's career, which lasted for 15 years and served to bring Europe under the influence of the Revolution. The Empire was built on the ruins of the Republic, but the work of the Republic had not been undone, for Napoleon's power was made possible only by the destruction of feudalism and privilege, and rested essentially on the mass of the French people. The Empire, created by a *plebiscite*, was a democracy in that it afforded the fullest scope to individual effort and offered the highest reward to individual worth. The militant spirit of liberated France, the ambition of its ruler and the fear foreign sovereigns felt at the Revolution brought on the Napoleonic wars. Their striking characteristic was the suddenness with which the state systems of Europe collapsed before the French Imperial democracy. Austria had been humiliated at Campo-Formio (1797) and

Lunéville (1801); the relic of her greatness, the Holy Roman Empire, was destroyed at Pressburg (1806) and she was beaten down into non-resistance at Wagram (1809). Prussia became a vassal of Napoleon after Jena (1806) and continued thus until the War of Liberation. Belgium and Holland were parts of France; the republics of Italy, practically that. The Spanish throne was overturned by Napoleon's touch, Switzerland obeyed him, the German princes fought under him, the Scandinavian states were dominated by him. Russia, the only Power that escaped territorial loss, was forced to become his ally at Tilsit (1807). Putting aside the splendid military talent of Napoleon, what was it that made the states of Europe go down before him? Principally, their own weakness. In fact it was not nations that fell, but merely rules and aristocracies; to the masses of the conquered populations who had not the slightest share in their own government, the rule of Napoleon and the imposition of French influence were indifferent, or welcome. But the French Emperor's disregard of public rights and his policy of managing the affairs of the continent for his selfish aims, roused national feelings. He solidified Spain and Prussia by hammering at them from without, for, to meet his assaults, the governments were forced to appeal to their peoples. The War of Liberation against Napoleon was the beginning of the liberation of European democracy. It was largely the peasant guerrillas of Spain in the Peninsula, and the peasant volunteers of Prussia and Austria at Leipzig (1813) that brought about his downfall. When his career ended at Waterloo, he had done the work of the Revolution. He had spread the seeds of nationality and democracy through Europe, had made possible a *Landwehr* and *Landsturm* in Prussia, a Constitution in Spain.

Not that the transformation of Europe was either conscious or rapid. European monarchs would have been astonished to find that in combating Napoleon they were adopting the principles he stood for. The period after Waterloo was a period of sharp recoil from the ideals of the Revolution, and a striving to return to the conditions that had existed before 1789. Under the leadership of Austria, the Powers at the Congress of Vienna entered upon a policy of reaction. The map of the continent, with which Napoleon had played havoc, was reconstructed in the interests of "legitimacy,"—of the rulers, that is, whom God had anointed and the Revolution overthrown,—and of the European Balance of Power, the two ideals of 18th century statecraft. France was limited to her ancient boundaries; Prussia secured important accessions in Poland, in Saxony, and on the Rhine; Belgium and Holland were built into a kingdom, Italy was reparceled, Sardinia was strengthened, Norway and Sweden were united, the Grand Duchy of Warsaw was given to the Czar, and a Germanic Confederation was established under the hegemony of Austria. The three years that followed the Congress of Vienna (1815) were marked by a conflict between Alexander of Russia, who loved to dabble in reform, and Metternich, Austria's chancellor, who was reaction incarnate. Alexander had initiated the Holy Alliance in 1815 for the purpose of preserving peace in Europe and promoting government according to the teachings of Christianity. But the after-murmurs of the Revolution, the activity of secret societies—Free-Masons, Carbonari and Burschenschaft,—frightened him and drove him to the side of Metternich. By 1818 the Holy Alliance had become an international union pledged to the repression of all liberal movements, led by Russia, Austria and Prussia, supported by France, under Louis XVIII. and by England under the influence of Castlereagh. At Troppau (1820), at Laybach (1821), at Verona (1823) the monarchs met and sent armies to crush popular risings in Naples, Sicily and Piedmont (1820-21) and to reestablish despotism in Spain and Portugal (1823), or took measures to crush out the national movement in Germany. The Holy Alliance dominated Europe till the revolt of the Greeks forced Metternich to uphold a Turkish master against Christian subjects. England was opposed to this, as well as to French interference in Spain, and dealt the Alliance a mortal blow by recognizing the independence of Spain's rebellious colonies in South America. The death of Alexander in 1825, and the establishment of Greek independence in 1827, practically dissolved the Alliance, but not before it had succeeded in restoring in Europe the absolutism of pre-revolutionary times.

The revolutionary movement of 1830 was a declaration that the fruits of '89 should not be lost. As in 1789, the impulse came from France, where Charles X. was endeavoring to restore old Bourbon conditions. The outbreak came suddenly, and its mission was to proclaim the sovereignty of the people. It called a citizen king to the French throne, it established the independence of Belgium, it liberalized the cantons of Switzerland and extorted constitutions in Hanover, Hesse, Brunswick, and Saxony. In Poland a formidable revolt occurred which was stamped out by Russia and resulted in the loss of the country's constitutional liberties. In the north and centre of Italy risings were put down

by Austrian arms. Disorders broke out even in isolated England. In Europe at large however the July Revolution failed. Though the Holy Alliance was dead, Metternich's hand still guided Austria, Prussia and Italy and Nicholas upheld his principles in Russia. Reaction followed the second revolution as it had followed the first. But if it had failed of results in central and eastern Europe, the revolutionary wave of 1830-32 served its purpose in keeping alive the spirit of resistance that was to burst out with full force in 1848.

The period between 1832 and 1848 was a time of wonderful ferment and fruition. The two forces of nationalism and democracy developed rapidly, all the more rapidly because they prospered together. The fall of the feudal system and the marvelous development of machinery had completely transformed economic conditions in Europe, and had created in the common people itself two classes, which now began to be called definitely *Bourgeois* and *Workers* or *Proletarians*. In those countries where the revolution of 1830 had been successful, it was the former class that had profited,—the class of traders, manufacturers and small land owners,—the "well-off," whose demands were not radical, who were not opposed to monarchy and were satisfied with the conquest of constitutional guarantees. The large mass of the population, the peasants and the town laborers had gained nothing, had not even acquired the suffrage. True democracy, then, had not been attained in 1830, but the power had been merely transferred from the aristocracy to the middle classes, who now showed themselves as jealous of their privileges as the nobility had ever been. There grew up, therefore, parties whose aims it was to restore the perfect quality of 1793 in social as well as in political conditions. In Germany and in Italy this growth of the democratic spirit was paralleled by the spread of nationalism, for it was recognized that the influence of Austria was as hostile to internal liberty as to external autonomy, and that the two movements of liberation must, partially at least, go hand in hand. For this reason the secret societies that honeycombed Europe were both democratic and patriotic. Mazzini, Garibaldi, the student revolutionists of Germany were republicans as well as nationalists. By education, by assassination, Young Italy, Young Germany, Young Poland, planned to further the double cause.

It was France again that gave the signal in 1848. A corrupt administration and an inglorious foreign policy, produced discontent; the selfishness of the middle classes stirred up a demand for radical reform; the weakness of Louis Philippe brought on revolution and a socialistic republic. Switzerland, which had just overthrown the Catholic *Landesbund* and expelled the Jesuits, was encouraged by the example of France to form a strong and liberal federation. In the smaller states of Germany such a wave of revolt swept up in March that princes in terror granted constitutions and reforms. In Berlin the people fought the soldiers in the streets and won the promise of a constitution. Hanover, Bavaria, Saxony followed the example of Prussia. But the full violence of the storm broke on Austria. At Vienna, the home of absolutism, the inhabitants rose and drove Metternich from the city; in Bohemia the Czechs declared themselves autonomous; in Hungary, Kossuth and the radicals, after carrying out reforms in 1848, proclaimed their independence and a republic in 1849. In Italy the rising began in Sicily early in 1848, extended to Naples, and finally to Piedmont where the king granted a constitution, the present constitution of United Italy. In the same month Lombardy, Venice and Tuscany joined the insurrection, and the danger to Austria grew highest when the King of Sardinia as champion of Italy declared war on her. Austria, however, triumphed in Vienna, in Bohemia, and with the aid of Russia, in Hungary. She defeated Sardinia in two campaigns, regained her provinces in the north of the peninsula and restored the legitimate rulers in the southern and central parts. In Germany the national movement that began so enthusiastically with the Frankfurt Parliament collapsed as soon as Austria was in condition to attend to German affairs. Once more reaction followed revolution. In France the republic became corrupt, fell, and was replaced by an empire; in Prussia the promised constitution, though granted, was not what had been demanded, and was almost nullified by an absolutist administration. Hungary lost its autonomy. Austria returned to the system of Metternich; the prospect of Italian unity was destroyed. But the reaction after 1848 was soon spent and the liberties which had been won and lost were restored by the governments under the irresistible pressure of events. After 1850 therefore, outside of Russia, the principles of representation, of general suffrage, of freedom of association and the press, were deeply rooted. The problem of democracy was well advanced toward solution. There remained the other question, nationality.

Sardinia acquired no territory in 1848-49, but she gained the acknowledged position of leader in Italy. Stronger than any other principality in Italy, it could

absorb the others, if only Austria were out of the way. Austria was put out of the way within 15 years. Cavour's foresight led to the participation of Sardinia in the Crimean War. The European Powers, grateful for her services, listened to Cavour's appeal at the Congress of Paris (1856) and manifested their approval of his attempts to find a basis of unity for Italy. Austria objected, and Sardinia began to arm. France had become her ally, for Napoleon III., eager for a brilliant foreign policy, saw nothing more brilliant than the humiliation of Austria. When Austria called upon Victor Emmanuel to disarm, he refused. When the Austrian army marched on Turin, the French went to meet them and defeated them at Solferino and Magenta. Policy made Napoleon abandon Sardinia in the moment of victory; but Lombardy was nevertheless gained, *plébiscites* declared for the annexation of the Central States excepting the Papal patrimony, and Garibaldi's victories in 1861 brought Sicily and Naples under the crown of Savoy.

Germany, after 1848, sank back into disunion. The attempt to form a North German Bund had ended disgracefully at Olmütz (1850) and the old German Confederation had been continued. But in Prussia Bismarck was rising. As early as 1850 he had decided that Prussia must assume the leadership of the German states against Austria, and that a struggle with Austria was inevitable. To prepare for the conflict, the resources of the kingdom were taken in hand by a strongly centralized administration, and the army was made the main pillar of the state. About 1860 Bismarck began his diplomacy. His plan in its main outline was simple; to use the Schleswig-Holstein affair as a means of entangling Austria unprofitably in northern politics, to put her into the position of a non-Germanic power interfering in German affairs and outraging German feeling, and then to turn upon her as the champion of German nationality and drive her from her place in the Confederacy. The plan succeeded. Austria was irritated by her failure in Holstein, and Bismarck's loud demands for imperial reform, backed up by the mobilization of the Prussian army, drove her to war. She went into the war unprepared and unallied. Prussia went in with a magnificent army, with Italy as ally and France neutral. Napoleon III. was playing the friend of German nationality as he had played the friend of Italian unity in 1859. Austria was overwhelmed in seven weeks, lost her leadership in Germany, lost Venetia to Italy, remained in political and economic ruin. Bismarck formed the North German Confederacy with Prussia as head.

Napoleon III. discovered the blunder he had made. He had helped to establish Prussia's power in the regions of western Germany where he had hoped to gain lands for France, and had raised a rival more powerful than Austria had ever been. Bismarck, too, saw the situation, and saw that France was now an enemy who would not rest till she had destroyed the newly created Power. He determined therefore to attack France before the loose Confederation should fall apart and Prussia's ascendancy be gone; before her splendid army should lose its efficiency. The Spanish Succession afforded a sufficient pretext. In the war of 1870-71 Prussia's triumph was completer than in that of 1866; both her rivals were now crushed and the North German Confederation became an empire. In 1870 Victor Emmanuel had occupied Rome, abandoned by the French defenders of the Pope. In the eighth decade of the century Germany and Italy took their place among the Powers of Europe, as consolidated states.

While Germany and Italy were being built, Turkey seemed going to pieces. Russia's designs on the Balkan Peninsula were ancient. In 1826 England had joined her in enforcing the independence of Greece, but jealousy of Russia's advance towards the Mediterranean caused a radical change in the attitude of the western nations, and especially of Great Britain. The Balance of Power reappeared on the scene, and the preservation of the Ottoman Empire was made an article of faith by diplomats of western Europe. The Czar, on the contrary, posed as the champion of Turkey's Christian subjects. When Mehemet of Egypt threatened to usurp the Turkish throne, the nations in 1841 guaranteed the integrity of the Empire. In defence of Christians in Turkish territory, Nicholas I. made war on Turkey in 1854; but France and England defeated him in the Crimea, neutralized the Black Sea, and closed the Dardanelles to foreign war-ships. In the Danubian Provinces, however, Russia extended her influence. When Herzegovina and Bosnia revolted, popular feeling in Russia drove the Czar to support their cause. The other nations remained neutral and Turkey suffered defeat in 1877 and 1878. The victor's advantages, however, were curtailed by a European congress at Berlin which continued the policy of preserving Turkey's integrity. Integral the Empire remained to the end of the century and a fruitful cause of international irritation.

The Franco-Prussian war marked the end of the period of revolution and international strife. The victory of Prussia introduced the period of European

armed peace. The nations of the continent created huge armaments, ostensibly for defence, and the terrors of possible war kept them quiet. To gain rest for Germany Bismarck attempted to form an alliance that should be strong enough to impose peace on the nations. When Russia failed him, he joined with Austria and Italy. France, left in isolation, sought and obtained an understanding with Russia, and three against two the nations remained to the end of the century. Thirty years of peace afforded opportunity for internal development. In France the Republic gathered strength, in Germany the empire became consolidated, in Italy the problems arising from unity were met and gradually overcome. The forces of nationality continued at work in eastern Europe, where Russia made herself the protector of the Slav nations of the Balkan peninsula, and Austria was rent by the conflict of races. The conception of the state drifted away from the idea of crown or government, and became more closely identified with the national life; with the economic life of the people as well as with the political. Simultaneously, there was a steady approach to perfect democracy; that is, to perfect political and civil equality, a steady approach to direct parliamentary representation, universal suffrage, freedom of speech and the press, personal liberty, personal security. International parties arose; the Socialists, the Democratic Catholic Church; grounded on fundamental economic principles, or on the religious life of the people. More than continental interests drew the attention of governments during the last two decades of the century; the field of national expansion and rivalry was extended to the globe; Africa and Asia were invaded by western civilization, and the peoples of Europe, having built up nations, set to building world empires.

GREAT BRITAIN.—Economic conditions which influenced only partially the political development of continental Europe played a predominant part in England during the 19th century. The French revolution produced little effect in Great Britain in furthering political and social equality. On the contrary it drove the country to a policy of reaction and retarded the progress toward reform that had been begun in the 18th century by the agrarian and industrial revolutions. Peaceful and gradual, these economic movements worked out in the long run greater results for England than political revolution did for France. They made the commercial and industrial classes supreme and thus brought about the general distribution of political power and the modification of abuses grounded on class rule. The transformation of an aristocracy of land-holders into an industrial democracy was accomplished by legal means without violence or the destruction of ancient institutions. The struggle of the trading classes against the land owners and of the working classes against the traders, the resistance made by an aristocracy sheltered behind an obsolete economic theory, the final triumph of liberal ideas in commerce, as well as in politics, and the dependence of the nation's greatness on her trade and manufactures, sum up English political progress from 1800 to 1900.

By the agrarian revolution is meant the change in the system of land ownership which followed the introduction of improved methods of cultivation and stock raising in the 18th century. Improvements, it was found, could be carried on profitably only on a large scale and therefore only by large land owners. Land became concentrated in the hands of the few. In the beginning of the 19th century the yeomanry which in the preceding century had numbered nearly 200,000, were practically extinguished. Their lands had been taken by large proprietors and they had become farm laborers or artisans. The industrial revolution tended to increase the landless class. The application of machinery to manufactures, the rise of factories, destroyed the domestic weaving industry on which the many small farmers depended and forced multitudes to abandon their holdings. They swelled the stream of labor that flowed from the south to the northern and midland counties, where water power, coal, steam and machinery were creating blasting furnaces, textile mills, manufacturing towns and an industrial population. Manufactures and commerce increased enormously and made England wealthy enough finally to overthrow Napoleon. The fall of Napoleon left England without a rival in manufactures or commerce. The artisan class grew, the *entrepreneur* and trading classes grew with them, and by 1830 became powerful enough to make head against the land-holding oligarchy.

The Need of Reform had been felt in the 18th century. Burke had even made a beginning, but the excesses of the French revolution chilled him. Pitt was well inclined towards reform, but was busy with law and finance. The conflict with Napoleon naturally put a stop to any movement that might seem tainted with French ideas. When discontent caused by oppressive taxation and a succession of bad harvests afforded radical agitators an opportunity, the govern-

ment suspended the habeas corpus, forbade public meetings and silenced the press. Artisans were prohibited from uniting to demand higher wages. Presently, however, the liberal ideas of the great industrial centres of the north gained influence. A spirit of humanitarianism, with which the names of Romilly and Wilberforce are connected, arose. Reforms were carried out in the administration of the criminal law. The right of combination among working men was established in 1825. The Catholics were emancipated in 1829. Slavery in the colonies was abolished in 1833. Agitation for radical parliamentary reform had been active for a long time, but unsuccessful. The demand for universal suffrage was laughed at and only Lord Russell's moderate measures could obtain a hearing. Behind him, however, were the great cities and the Whig middle classes, who finally forced a redistribution of seats in 1832. Seventy seats in the House of Commons were transferred from rotten boroughs to the northern towns and Yorkshire. The reform bill of 1832 was a victory of the middle classes in that it admitted them to the House of Commons and established the supremacy of that House. The agricultural and industrial laborers had gained nothing though their needs were many. Generally speaking the lot of the English workmen before 1832 was unhappy. The transition from agriculture to manufacture and from hand work at home to the factory system had wrought misery. Machinery enabled women and children to compete with men and lowered wages. War with France had occasioned fluctuations in production and consequently in the demand for labor. Bad harvests and the corn laws combined to make bread dear. The greed of capitalists in the full flush of money-making subjected women and children to excessively long hours in unsanitary workshops. An unwise poor law, badly administered, pauperized the laborer. Partial remedies for these evils were devised. Factory acts regulating the hours of work for women and children in mills and mines were passed after 1832 and a better poor law was enacted in 1834. But distress and dissatisfaction persisted and found expression in the Chartist movement. The Chartists demanded among other things annual parliaments, manhood suffrage, and election by ballot. And though their agitation produced no definite result, it furthered the advance towards broader representation. Parallel with the Chartist movement and tending toward the same object was the anti-corn law movement. More conservative in character, it was led by men of the Manchester school who united a sincere desire to help the poor with disbelief in the system of protection of which the corn laws were the remnants. Free trade won a decided victory when Peel in 1842 instituted a sweeping reduction in import duties, and it triumphed in 1846 when the corn law was repealed. The repeal of the navigation act followed in 1849 and in 1852 the policy of protection was abandoned by the Conservative Party in Parliament.

The conversion of the country to free trade completed the downfall of the land-owning aristocracy, but brought no gain in political power to the laboring classes. If Chartism as a name failed, its principles in modified form had spread through the nation. The Crimean War and the Sepoy Rebellion drew away attention in great measure from home affairs for nearly a decade. But the demand for broader suffrage becoming all the more pressing after 1860, forced in 1867 a conservative government to introduce a second franchise reform bill. As improved by the Liberal Opposition in committee, it gave a vote to every inhabitant of a borough who paid rent to the value of £10 a year, and to every inhabitant of a county occupying lands or houses on an annual rental of £12. The ballot act of 1872 supplemented this piece of legislation by providing for secret elections, and thus giving the voters free choice. A million electors were thus created, almost entirely out of the ranks of artisans in northern England. The approach towards democracy was revealed in the rise of trade unions as factors in economic affairs and politics, and the prominence given to labor legislation in Parliament. The prevalent doctrine of *laissez-faire* began to be limited by the consideration that the state must interfere to insure a fair chance for the weaker side. Factory and workshop acts, laws defining the rights of working men and the liabilities of employers, above all the education act of 1890 establishing a national system of elementary instruction, indicated the growing recognition of the fact that the state was based not on classes and privilege, but on the manhood of the nation. The third reform act in 1884 added two million voters to the electorate by extending to the counties the same requirements for the franchise as prevailed in the boroughs.

The existence of Democracy in England has proved compatible with the existence of undemocratic institutions. At the end of the century the House of Lords was still influential. Though freedom of religion prevailed, there was an established church. And in spite of the abolition of the purchase of com-

missions, the army remained essentially aristocratic. Even in politics rank maintained prestige. In social life especially, class distinction remained definite.

English political history, then, during the greater part of the 19th century may be summed up as the steady retreat of the Conservative before the Liberal interest. Yet the end of the century presents the spectacle of the Liberal element turning Conservative. The responsibility of wealth imbued manufacturers and traders with much of that selfishness and opposition to change which the old land owners had displayed. Politics assumed a cynical tone. The theory of the struggle for existence was made a defence for selfinterest.

The union of Ireland with Great Britain did not bring about Catholic emancipation, as Pitt had promised. It required years of agitation on the part of O'Connell to procure the removal of religious disabilities. His success was due to the fact that he drew his support from the Irish peasantry whom he had stirred to the consciousness of national life. The hope of building up an Irish nation based on the sentiment thus created, led O'Connell to demand the repeal of the Union and drove his younger followers to insurrection. The failure of the revolt of 1848 and of the Fenian movement proved that local independence could not be obtained by force. Voluntarily England would not grant independence for fear that the enfranchised Catholic majority would destroy their Protestant enemies of the north. An iniquitous system of land tenure which prevailed in the Island outside of Ulster became the chief subject of legislation on the part of Parliament. To guarantee the tenant partial security of tenure, compensation for improvements made on land and a fair rent were the objects of several acts passed during the century. After 1850 there was no repetition of such terrible famines as that of 1845 which killed two millions of Ireland's inhabitants and drove a million more as emigrants to America. Dissatisfaction, nevertheless, continued and found expression in the Home Rule movement led by Parnell. Gladstone, who had disestablished the Irish church in 1870 and had shown himself the friend of the Irish in the land laws of 1870 and 1881, made himself the champion of Home Rule. But the Liberal party split upon the issue, and the question of an Irish Parliament was wrecked. See also article COLONIZATION.

FRANCE.—In 1801 Napoleon was still, in form, the elective head of a republican government; in reality his absolute rule had begun. The Senate was feeble, the Legislature servile, the Tribunate was virtually, and later actually, abolished; the First Consul governed through his council of state. A *plébiscite* in 1802 put him into office for life, another in 1804 made him emperor. He ruled the country, as he commanded an army, centralizing the administration. Selecting able assistants, he governed autocratically but well, aiming to satisfy all classes. The Code Napoléon is the basis of modern French jurisprudence; the concordat with the Pope, determines the relation of Church and State at the present day; the national system of education was practically founded by the institution of the state universities. Bread at home and glory abroad kept the majority of people satisfied; an admirable system of police kept the minority silent. But after ten years of continuous slaughter had drained off the manhood of the nation, and began to draw on boys of seventeen, Napoleon's power crumbled and the Allies found no difficulty in bringing back the Bourbons. Militarism died, and France, with her old king ruling within her old boundaries (Venaissin and Avignon only, remaining of all her conquests), began peacefully to solve the social problems which the Revolution had put.

The Restoration.—Louis XVIII. denied the legitimacy of the Revolution, but recognized its effects. As source of all authority he granted, in June 1815, a charter which established a legislature with a popular chamber, controlling finance, a responsible ministry, freedom of religion, and the eligibility of all citizens to office. The king was honest and held by the charter, in spite of the Royalist reaction which began in 1816. Five years he ruled through liberal ministries; then the growth of the radicals drove him into the arms of the absolutists, led by the Count d'Artois, who controlled the old king, and succeeded him in 1824 as Charles X. From 1820 to 1830 a determined attempt was made to abolish the liberties granted by the charter. The press was gagged; the Jesuits were recalled, the clergy made dominant in public education. The Constitutionalists, led by Royer-Collard and Guizot, were forced, in defence, to join issue with the Liberals and Radicals. Charles X., in 1829, frightened, called in a liberal ministry. He then grew desperate and built an ultra-royalist cabinet under Polignac (1829); dissolved two Chambers of Deputies, and finally on July 25, 1830, abolished constitutional government, by ordinances suppressing the liberty of the press and changing the electoral law. The journalists rose, the workmen of Paris joined them, and the National Guard under Lafayette attacked

the king's troops. A provisional government refused to recognize Charles X. and made Louis Philippe lieutenant-general of the kingdom. In August the Chambers declared Charles X. abdicated and called Louis Philippe to the throne.

The Orleanist Monarchy.—Dissatisfaction with Louis Philippe existed from the beginning. The disappointed Republicans rose in Paris in 1831, the royalists in Vendee in 1832. Economic conditions were shaping political parties and the government sided with the party of the rich. Among the peasants in the country and the workmen in the cities who had no voice in the government, socialism and communism were popular—especially at Paris, where the theories of Owen, St. Simon and Fourier were advocated as political panaceas by Louis-Blanc, Blanqui and others. Guizot and Thiers alternated in office, but accomplished no conspicuous change in the government's weak policy. Presently opposition in the Chambers arose. The conquest of Algeria could not blind the people to conditions at home. The demand for reform became imperative. The government's endeavor to prevent a banquet arranged by radical leaders at Paris in February 1848 brought the mob into the streets and sent the army over to the rioters, and Louis Philippe abdicated. A crowd invaded the Chamber of Deputies; another, led by Socialists, seized the Hotel de Ville. A provisional government declared the republic, a national assembly drew up a constitution, and an executive council was chosen. The Socialists had been given a share in the provisional government and had organized national factories to supply idle men with work; their exclusion from the Council caused a revolt in May, which was crushed out. Lamartine and Cavaignac established an "orderly" government, abolished the workshops, stifled the rising of workmen, and ordered elections for president.

The Second Republic and the Second Empire.—The first president of the Republic was Louis Napoleon, nephew of the great emperor. He came into office on his uncle's reputation. The Socialists were exasperated at their betrayal, and plotted the fall of the republic; their violence drove the majority to reaction, and left no room for a moderate party. Napoleon, who had desired imperial power from the first, had the army with him, and on Dec. 2, 1851, delivered his *coup d'état*. A *plébiscite* decreed a new constitution and made him president for ten years; a *plébiscite* a year later made him emperor. The first empire was reproduced with centralized government, a dummy legislature, a submissive judiciary, and a brilliant foreign policy to keep the people amused. In Crimea and in Italy Napoleon posed as the champion of weak nationalities and was successful; at home a vast system of public improvements, the rebuilding of Paris, made him popular. A period of moral lethargy set in. The launching of great enterprises set French speculation mad; the extravagance of the government made many men rich and all men wild to get rich. About 1860 Napoleon's foreign policy began to fail, and opposition at home to increase. Demands for rights were heard in the legislative corps and financial crisis forced the emperor to make concessions. The disaster of Maximilian in Mexico, the sudden rise of Prussia, the increase of discontent, shattered his resolution. In 1869 he consented to introduce a liberal *régime*, parliamentary government, and a responsible ministry. To save his tottering empire, Napoleon sought war and glory, and found Bismarck ready to accommodate him. The rottenness of the beautiful French empire had entered into the splendid French army. It was disorganized, badly equipped, officered by incapable men. It was defeated and annihilated in one month. The country was invaded, Paris was taken. On September 4, 1871, the Chamber of Deputies proclaimed the third French Republic.

The Third French Republic.—A provisional government continued to war against Germany until the voice of the country forced it to make peace. The young republic had a bitter fight for life. Monarchists plotted for the reestablishment of the Bourbons, or the Orleanists, while the Commune in Paris and a new Terror were instituted by Socialists and Radicals, afraid of a monarchy. In the struggle between the factions no permanent government was established till 1875, when the new constitution was created. Clerical reaction threatened the republic in 1877, radicalism attacked it in 1882, militarism under Boulanger, in 1887. The rancor of parties and the inexperience of leaders brought on tumult in the legislature and confusion in the government; but in the last decade of the century stability and peace came to the country.

THE GERMAN PEOPLE.—During the struggle with Napoleon the German states learned what personal freedom, political equality, nationality, meant; and though force, after 1815, restored the old form of things, the soul had passed out of them, and the new ideals slowly gained strength. The diet of Ratisbon coming hard on the treaty of Lunéville in 1801, wrought important changes in the constitution of the Holy Roman Empire by secularizing the

ecclesiastical states, suppressing the greater number of free cities and augmenting the power of the smaller princes at the expense of the large kingdoms. The battle of Austerlitz was followed by the dissolution of the empire and the formation of the North German Confederation under the practical suzerainty of France. Prussia, after Jena, lost half its territory and became Napoleon's ally, but in the hope of regaining her provinces entered, under Stein, upon a series of reforms, for the strengthening of her resources. Class distinctions and inequality in taxation were abolished, freedom of trade was established, freedom of religion guaranteed. The extinction of serfdom was carried out; a national *Landwehr* was created, representative municipal governments were erected and the calling of a national representative assembly contemplated. Directly, therefore, in western Germany, indirectly in Prussia, and to a slight extent in Austria, French influence brought about a movement of reform and liberation; while French despotism quickened the sense of patriotism and vivified the conception of a German fatherland. But the hope of a strong Germanic nation, born in the war against Napoleon, died at the Congress of Vienna.

Under Metternich's dictation the Roman Empire was recreated in the form of a Germanic confederation, a loose horde of governments united by a Diet under Austria's control. Feeble federalism between the states, absolutism within the states, such was Metternich's political ideal for Germany. But the disappointment of those who had hoped for a liberal régime found expression, in Prussia especially. The students of Jena organized the *Burschenschaft* and agitated for German unity. Other secret societies sprang up. The murder of Kotzebue by the student Sand in 1819 frightened the rulers. The king of Prussia who had been thinking of granting a constitution hesitated, while Metternich at Carlsbad, caused the Diet to issue the decrees which silenced the universities, muzzled the press, dissolved the *Burschenschaft* and abolished the right of association. In the Final Act of 1821, the princes of Germany reasserted their unqualified adherence to the doctrine of state sovereignty. If however direct political agitation in favor of liberty and unity was forbidden, indirectly the cause of both was furthered; of the one by the rise of philosophical and religious speculation, of the other by economic development. The spirit of resistance to arbitrary authority broke out in attacks on established dogma; in the struggle that ensued all Germany took part, and as a result of the victory gained by the new theology the country became saturated with ideas of liberty and individual rights, not only in religion but also in politics. Prussia, meanwhile, had been carrying on a commercial policy that counteracted in great measure the influence of Austria. The abolition of customs and tolls within her territories, the formation of treaties with other states, and finally the establishment in 1834 of the *Zollverein* or Custom's Union, embracing most principalities north of the Main, had been the beginning of a closer drawing together of the North German states. The possibility of a union without Austria became apparent, the advantages of transferring the leadership to Prussia became distinct. By 1848, therefore, the causes of democracy and of unity, in spite of Austria's repression, had gained over the mass of the German people.

The upheaval of March 1848 indicated to what extent the liberal movement had spread; the signal may have come from France; the preparedness of the country was the result of internal agitation. In Prussia the United Provincial Diets were refractory and were dissolved; but the people of Berlin fought the king's troops, till a constitution and a national assembly were promised them and a Constitutional Assembly summoned. In the southern states of Germany princes had granted constitutions. The triumph of liberal ideas seemed complete. The worst of the storm came upon Austria. The Viennese rose suddenly and irresistibly; absolutism immediately collapsed and Metternich fled from the city; the inhabitants were promised a constitution. Hungary obtained one, Bohemia demanded fundamental rights and the establishment of equality between Germans and Czechs. But as suddenly as insurrection rose, it fell. The emperor came to Vienna with troops. Prague and the capital were crushed into subjection. Austria, taking advantage of the dissension between Magyars and Slavs, and aided by Russia, conquered Hungary, deprived it of its autonomy, and held it under military rule for ten years. Toward the end of 1849 Austria had restored quiet in her dominions. In the north a universal demand for the dissolution of the confederation and the formation of a strong German state, had led to the assembling, at Frankfurt, of a parliament elected by universal suffrage to devise a new form of government. In 1849 this parliament decided that the union should not include Austria, that it should be a monarchy, not a republic, and that its head should be an emperor. To the king of Prussia the imperial crown was offered. But in 1849, Austria's strength had been restored, and under her impulse a wave of reaction set in which swept away all the work of 1848.

Intimidated by statesmen, and fearful of revolution, the king of Prussia refused the crown and the other German princes expressed their hostility to the Parliament, which soon dispersed. The Confederation, which had been dissolved by the Parliament, was recreated by Austria, and Prussia, who had failed to construct a permanent union of northern princes, was forced into reëntering the Confederation in 1850. The German movement of 1848 failed therefore in one of its objects, the attainment of unity; but succeeded in the others, the conquest of political rights within the different states; for government in Germany after 1850 was constitutional.

Between 1850 and 1864 Prussia and Austria were engaged in a struggle for control in German affairs. In Prussia, leading statesmen, chief among them Bismarck, were convinced that supremacy could be decided only by arms, and preparations were accordingly made. Economic reforms were introduced, the resources of the country were developed, the Zollverein was extended. The army was increased, and put into a state of splendid efficiency. To strengthen the army, Bismarck was forced to oppose the Chamber of Deputies, and for four years he ruled unconstitutionally but effectively. Austria was prevented from making sufficient preparations by internal problems. The Revolution of 1848 had been followed by monarchic and clerical reaction, and the institution of a centralized form of government. Reform was presently necessitated by the demands of Hungary; but all efforts at governmental reform failed because of the jealousy of the races within the Empire: for any concession to the Magyars was sure to awaken the resentment of the Germans and Slavs, and to be followed by a demand for equal rights from the minor peoples. While, therefore, constitutional right was meted out in small portions, and considerable approach was made toward political equality, the organization of the Empire remained unsettled, and only spasmodic attempts were made, now to establish a federation, now to erect a dual monarchy, now to continue the policy of centralization. In this condition Austria was forced to enter in a war with Prussia. She met overwhelming defeat and lost the position she had occupied as leader of Germany.

Prussia gained territory and inhabitants by her victory, and formed the North German Confederation, composed of the states north of the Main. She extended her military organization over the whole confederation, introduced her custom system, administered commerce and public works, and mustered the strength of Germany for the conflict with France which French ambition made inevitable. As Austria's defeat made the Confederation, so France's downfall made the German Empire. Separate treaties between the North German Confederation and the southern states in 1870 bound the two into an imperial federation, with local autonomy in the separate states, with strong powers vested in the central government. With peace guaranteed by a magnificent army and alliances abroad, the new Power, from 1870 to 1900, had to deal only with internal problems of politics and economics. The struggle from 1873 to 1887 between Bismarck and the Catholics, the so-called *Kulturkampf*, occasioned by Prussian legislation against the clergy, ended in compromise with regard to the obnoxious laws, but resulted also in the definite assertion of the supremacy of the civil power, and the establishment of the fact that religious factions could not destroy the unity of the empire. The rise of the social democratic party brought on severe measures of reprisal from the government, but after 1890 the socialists became so powerful and permanent a factor in politics that they could no longer be treated as merely a disturbing element. Their influence coupled with a natural tendency toward centralization compelled the government to embark on a policy of paternalism or state socialism. Under the fostering care of the government manufactures and trade prospered and colonization was begun in Africa, Asia and South America to supply the empire with markets. At the end of the century Germany presented a remarkable example of the harmonious working of diverse elements; an aggressive democracy ruled by a monarch believing in the divine right of kings, a powerful and rich *bourgeoisie* dominated in social life by the aristocratic and military class, a Protestant country whose most powerful party is the Catholic centre, a parliamentary government with an executive equal in power to the legislature, frequently influencing its procedure, sometimes defying its action.

Austria at present.—Austria's defeat in 1866, marked the end of her career as a Germanic state. Her subsequent history is concerned with the struggle of the races within her bounds. Germany was an empire because of nationality, Austria was an empire in spite of nationality. The most important question, that of Hungary, was settled temporarily in 1867, by the reëstablishment of a dual monarchy, wherein Austria and Hungary are bound together by little more than a personal tie. This union, weak in itself, was made weaker by the

demand of the minor races for autonomy and national recognition. The conflict between Germans and Czechs in Bohemia, between Slavs and Magyars in the southern provinces, raised the doubt whether an empire embracing scores of ethnical groups speaking nearly fifty different languages, could exist. In 1900 government and legislation were paralyzed by racial dissension, and the bond between Hungary and Austria seemed to be yielding to the hostile strain.

ITALY.—The French gave Italy republican institutions and liberty; Napoleon abolished the republic and curtailed the country's liberty, but gave it order, peace and prosperity. The restoration brought back the legitimate rulers, brought back disunion, absolutism and misrule. In Piedmont, in Naples, in Tuscany, Parma and the Romagna, Austria was influential; in Lombardy and Venice her direct rule was reestablished. To regain the rights which the French Revolution had given them and Metternich had taken away, the Italian people formed secret societies and plotted insurrection. The Carbonari were powerful between 1816 and 1830, and fomented the general uprising of 1820, which was followed by Austria's vengeance, and by reaction. When the popular movement of 1830 likewise had failed, the Carbonari were replaced by Mazzini's Young Italy, a society which was neither secret nor hierarchic, which stood for the freedom and unity of Italy, and strove for the creation of a spirit of national resistance. In direct results Mazzini failed, but in bringing home to Italians the feeling of fatherland and freedom he founded the unity of his country. It remained for cool statesmanship to make practical use of the sentiment which Mazzini had brought into being. Piedmont was the only important state in the peninsula that having granted a constitution in 1848, lived up to it; and when popular clamor demanded war against Austria, the king of Piedmont put himself at the head of the national forces. They suffered defeat, but won the sympathy of Europe. By perfecting Piedmont's internal administration and showing the western nations an example of efficient government, by pursuing moreover a vigorous foreign policy, D'Azeglio and Cavour, ministers of Victor Emmanuel, gained for their country the good wishes of England and France. The participation of Sardinian troops in the Crimean war, led to Sardinia's admission, on a footing of equality with the great Powers to the Congress of Paris, where Cavour's appeal for redress in Italy, graciously received by the diplomats, exasperated Austria and brought on war. Lombardy was acquired by conquest in 1859, and the central states, by popular vote, declared for incorporation with Sardinia. In the south, Garibaldi, whose revolutionary mind Cavour deplored, but whose activity he appreciated, drove the Bourbons from Sicily and Naples and brought the provinces under Victor Emmanuel's rule. In 1861 the first Italian parliament met at Turin, and Victor Emmanuel became king of all Italy, save Venetia and Rome. The years that followed were years of economic development and the establishment of orderly rule; but quietly the movement towards the absorption of the unassimilated portions of the peninsula continued. When Garibaldi in 1862 set out to invade Rome, royal troops defeated him; for the government feared that his extreme opinions and conduct would estrange the European nations, and work harm to the cause of unity; but when the alliance with Prussia in 1866 opened a way for the acquisition of Venice, the state seized the opportunity, and showed the same decision in 1864 when Napoleon, in a convention, agreed gradually to withdraw her troops from Rome and leave the city to the king. Italy became a unit in 1870, when Rome, abandoned by the French, was occupied by Victor Emmanuel, and succeeded Florence as the capital of the kingdom. Many serious problems confronted the new born realm, arising out of the sudden welding of political elements and entities that, for centuries, had been distinctly apart. The difference of economic conditions between various regions was great. The north of Italy was, on the whole, prosperous, and owing to a moderately good government, content. The south, under Bourbon rule, had become poverty stricken, disorderly, infested with smugglers and brigands. The north therefore sent moderate men to the Parliament, of constitutional tendencies, belonging chiefly to the middle class; the south elected radicals and socialists, bred by the unhappy condition of the country. From 1870 to 1880 quarrels between conservatives and extremists endangered the monarchy; the struggle terminated in victory for the Left, which had in its favor the dissatisfaction and actual want created by excessive taxation. In assuming the responsibility of office, however, the radicals, greatly modified their views, and by occasional compromise with the Right, preserved unity and order. The entrance of Italy into the Triple Alliance involved heavy burdens of military and naval expense, and her plunge into colonization cost her thousands of men in Abyssinia and many millions of dollars. Financial difficulties created by this policy of extravagance, found exoression in rioting and Anarchistic

demonstrations, but the events following upon the murder of Humbert I. by an anarchist in 1900, indicated that, in spite of many vexing internal problems pressing for solution, the unity of the country, the existence of the monarchy and the supremacy of the state over the church were safe.

RUSSIA.—The internal history of Russia in the 19th century resembled the history of the other European countries in that it presented a succession of progressive and reactionary movements tending towards the ultimate realization of liberal ideas; but differed from the political development of western Europe in the fact that the rate of progress was slow. At the end of the century, the constitutional problems which the occidental nations had fairly solved, in Russia had not yet received sufficient consideration. When Alexander I. became Czar in 1801, he was imbued with liberal ideas. He began his reign with the concession of many reforms. He even dreamed of a constitution. But the sudden surge of the people towards freedom, the spread of revolutionary ideas brought back from France by his conquering armies, and the rise of secret societies made him recoil to absolutism. His last acts were as despotic as his early deeds had been liberal. Nicholas, who succeeded him, was by nature autocratic. The rising of the Decembrists in 1825, the Polish Revolution of 1830, resulted in a policy of repression. The Czar assumed the role of champion of Divine Rights of Kings, in which character he intervened to save the Austrian Empire from the Hungarian rebels in 1849. He did establish elementary forms of local self-government, he made an attempt at codifying the laws, he considered, even, the question of peasant emancipation; but all reforms, he had it understood, must come spontaneously from above, and might not be demanded as a right by the people. The outcome of the Crimean war struck a blow at absolutism. An outburst of national resentment, indicative of a forward movement that had been going on in spite of repression, raged against the despotic government and bureaucracy that had weakened the nation and brought on defeat. Alexander II., who succeeded Nicholas in 1855 was not by nature inclined to withstand the clamor for reform. The judicial system was recast, local government widened and confirmed, education made freer. In 1858 the liberation of 20,000,000 crown serfs was begun, and the question of the freeing of private serfs was entrusted to an imperial commission and district committees. From February 19 to March 3, 21,000,000 peasants were emancipated; lands were granted them, paid for with money lent them by the state; the ancient *mir* or commune was reorganized. But the Polish insurrection created reaction. The appearance of terroristic Nihilism between 1870 and 1880, continued it. The hope of a liberal regime, and a constitution, was extinguished by the assassination of the Czar in 1881. The fate of his father set Alexander III. against concession; though special commissions were created from time to time to further individual interests in the country, the project of a constituent assembly was abandoned. Measures were taken to promote the welfare of the peasants, but right of legislation was refused them. To consolidate the State, the liberties of the German provinces and of Finland were attacked, to strengthen the Church the Jews were persecuted; education was watched, and the press kept under censure. The accession of Nicholas II. gave birth to hopes which were not fulfilled; the will of a young man could not prevail against the huge dead weight of an oriental bureaucracy. The need of reform was still unsatisfied in 1900.

Territorial Acquisition.—The progress of the country in territorial acquisition was in sharp contrast with its tardiness in internal reform. Broadly speaking the direction of expansion was changed in the 19th century from the west to the east. The European powers frustrated Russia's designs on Turkey, and caused her to turn her attention to Asia. After 1812, when Bessarabia was acquired, she made practically no addition to her conquests in the southwest. In 1856 and in 1878 the Powers interfered in the Czar's quarrel with Turkey, to rob the victor of his spoils. As a result the independent Slav states of the Balkan arose, where Russia's influence might be predominant, but where her rule could not extend. On the northwest frontier Finland was acquired in 1809. Alexander I. conceded the duchy extensive rights of self government, but at the very end of the century these rights were curtailed by imperial edicts, and a process of Russification was begun, intended to turn Finland into a mere province. Poland lost its independent existence in 1830, and its local privileges after the insurrection of 1863. The process of assimilation with Russia was facilitated there by the identity of race and similarity of language. In Transcaucasia, Georgia was acquired in 1801, and almost continuous fighting till 1864 brought the Russian frontier down to the Ararat mountains, north of Persia, and to the Caspian sea. In Central Asia, after 1840, rapid progress was made in the Khanates of Turkestan. Tashkend, Samarkand, and Khiva were subjugated

before 1875. Pressure southward extended Russian territory to the borders of Afghanistan and brought it into touch with India at the Pamir. In Siberia the north bank of the Amur and the maritime province of the east were acquired, with Vladivostock, a port on the Japan sea. After 1895, the acquisition of Port Arthur, the occupation of Manchuria, and the extension of her influence over Persia and Asiatic Turkey, indicated that Russia, having gone east as far as she could, was turning south upon China and India, and the Mohammedan monarchies of western Asia. It is her advance in the far Orient that gave the Slav empire the high place it holds among the Powers. The forward movement of its soldiers, merchants and railway engineers, has assumed portentous proportions.

SPAIN after 1800 was ruled by the worthless Charles IV., who was controlled by his favorite Godoy, a man subservient to Napoleon. Ferdinand, the crown prince, resting on his popularity with the people, plotted the overthrow of Godoy, and sought support at Paris. Napoleon played with both, enticed king and prince to Bayonne (1808) and forcing both to abdicate, placed his brother Joseph on the throne. His design was to employ Spain for the destruction of Portugal which alone on the continent had refused to join him in his commercial war on Great Britain. The usurpation of the crown roused the country to insurrection and a revolutionary junta carried on, in the name of Ferdinand VII., a guerrilla warfare against the French. Wellington, from Portugal, came to their aid and repeatedly defeating the Emperor's marshals, shattered his power. To muster the full forces of the nation, the Cortes in 1812 adopted a constitution saturated with the ideas of the French Revolution, providing for a legislative assembly, limited executive, freedom of the press, freedom of religion, and the abolition of clerical privilege. Suitable only as an ideal to fight for in times of stress, in peace the constitution did not appeal to the peasantry, the clergy or the aristocracy, and when Ferdinand VII. was restored in 1815, he found no difficulty in discarding the compact and reestablishing the old order of things. A revolution in 1820 forced him to reenact the charter and gave the country a parliamentary government for two years, till France, as agent for the Holy Alliance (See EUROPE) interfered with arms to suppress the liberal movement. From 1820 to 1876 Spain had little peace. Ferdinand's abolition of the Salic Law by Pragmatic Sanction, and the succession of his daughter Isabella, brought on civil war with the adherents of the legitimate heir, brother of Ferdinand, Don Carlos. In 1836 Christina, regent of the kingdom, was forced to revive the constitution of 1812, and was driven from the country when she attempted to make herself absolute. Under Isabella II. conservatives and liberals strove for power, till the latter, weak from dissension, were cast out of the kingdom. United, they returned in 1868, and under Prim fomented risings throughout the country, which was weary of the dissoluteness, tyranny and anarchy of Isabella's reign. The Constitution was once more regenerated, and Amadeus of Italy was called to be king. He could not live amid the strife of parties, resigned, and was succeeded by a republic in 1873. The republic in turn gave way in the clash of militarism, separatism, clericalism, and Carlism. Isabella's son Alfonso XII., next occupied the throne, and on his death was succeeded by his daughter, and then by his posthumous son, Alfonso XIII., who at the end of the century still reigned, under the tutelage of his mother. Internally then, the century was one of revolution and civil strife for the nation; and though the final result seemed to be the establishment of parliamentary government and the Bourbon monarchy, the danger of Carlism and clerical reaction was strong enough in 1900 to alarm the supporters of liberal institutions. Externally, misfortune uniformly followed Spain. She lost Mexico and the South American colonies after 1820; she lost the remnant of her empire in 1898. Economically her condition in 1900 was only mediocre; civil war had hampered agriculture and industry, and the last foreign war seriously affected her commerce. Hope existed only in the possibility that the loss of the colonies might force Spanish statesmen to confine their attention to the mother country, and to attempt its regeneration by insuring quiet and opportunity for the development of its rich natural resources.

GEOGRAPHICAL DISCOVERIES.—*Arctic Exploration* began actively in 1818 in renewed attempts at a Northwestern Passage. Later the North Pole became the aim of numerous expeditions. In the prosecution of the first object much of the north coast of North America and parts of the Arctic Archipelago were explored. The names of the two Rosses, Franklin, McClure, and Rae, among others, are connected with the exploration of the western half of the Arctic Zone. Of these, James C. Ross discovered the magnetic pole in 1831 and McClure, in 1854, accomplished the long desired Northwestern Passage. In the eastern hemisphere the exploration of Spitzbergen, Franz Josef Land and the New Siberian

Islands proceeded, and in 1879-80, Nordenskjöld effected the Northeast Passage. The eastern and western coasts of Greenland were ascended by the hunters of the pole. On the east coast Scoresby, master of a whaler in 1823, attained the latitude of $81^{\circ} 30'$; Parry in 1827, by means of sledge journeys reached $82^{\circ} 45'$; on the west coast Kane, Hayes, and Hall, explored the Smith Sound region and the straits above it; Nares in 1876, hunting for an open polar sea advanced to $83^{\circ} 20'$; Lockwood and Brainerd of the Lady Franklin Bay expedition carried the American flag to $83^{\circ} 24'$, the "farthest" point of land known to-day. In the eastern hemisphere Nansen in 1895, by drifting and sledge journeys, went as far as $86^{\circ} 14'$, and in the last year of the century the Duke of the Abruzzi reached the "farthest north," $86^{\circ} 30'$. This remarkable series of explorations disproved the theory of an open polar sea and established the facts that Greenland was an island (Peary 1892), and that no extensive tract of land was situated around the North Pole (Nansen 1895). In the Antarctic regions the voyages of Palmer, Bellingshausen, d'Urville, Wilkes, Ross and Borchgrevink resulted in the discovery of Graham Land, Kemp Land, Wilkes Land, and Victoria Land, all supposed to be the ice-bound coasts of an Antarctic continent. The furthest point south was attained by Borchgrevink in 1900.

On the North American Continent the basins of the Mackenzie and the Yukon, Labrador, Baffin Land, and the territories around Hudson Bay were explored. The region west of the Mississippi was traversed in 1804 by Lewis and Clarke, who reached the Columbia river. Schoolcraft discovered the source of the Mississippi in 1832. Pike, Long, Bonneval, Fremont, Kearney, Boone, Emery, Hayden, and a host of others explored and mapped the mountains and river basins of the Great West. In South America the work of Alexander von Humboldt in the regions of the Orinoco and the northern Andes put exploration upon a scientific basis. His work was continued by an army of great naturalists and travellers who spread over the entire continent, Spix, Martius, St. Hilaire, Poggig, Schomburgk, Darwin, Agassiz, Tschudi, Castelnau and Burmeister. By 1832 the coast line of *Australia* had been well established through the voyages of Bass, Flinder and Captain King. Evans, Sturt and King traced the courses of the principal rivers between 1814 and 1840. In 1860 Burke and Wills crossed the island from north to south, and in 1858-62, Stuart drew a line of telegraph across the continent from east to west. Forrest, Giles, Warburton and Carnegie explored the desert regions of the interior. In Asia the Russians did fine pioneer work. In the early part of the century they traced the Arctic coast of Siberia. A long line of explorers, of whom the greatest were Valikhanof, Fechenko and Przevalsky, traversed the regions of Ural, the Caucasus, the Aral and Caspian seas, Circassia, Turkestan, Mongolia, Manchuria, and the country of the Amur. Tibet was still a mystery at the close of the century, but important investigations had been made there by Huc in 1845, the pundits Krishna and Nain Singh, Rockhill, Schlagintweit, Younghusband, Bonvalot, and most important of all, Dr. Sven Hedin (1893-97 and later). In the last thirty years of the century China became well known and Japan was opened to western civilization. Indo-China was explored by Garnier and Henri d'Orleans.

Africa, the darkest of continents at the beginning of the century, became the richest field for discovery. The great region of the Sahara, and the valleys of the Niger, the Congo, the Zambesi and the Nile were made in the end more familiar to the world than the forests of Brazil. Mungo Park had died in 1806 while attempting to prove the identity of the Niger and the Congo; the true course of the former was established before 1830 by Clapperton, Denham and Lander. From the western coast and Guinea the French and English penetrated into Senegal, Gambia, Dahomey, Ashanti and reached the city of Timbuktu. In 1822 the Sahara was crossed for the first time from Algeria to Lake Tchad. After 1850 Heinrich Barth amassed a vast amount of information concerning the western part of the Soudan. His successors, Nachtigal, Schweinfurth and Rohlfis, studied the eastern half of the Soudan and the region of the Sahara. In 1858 Burton and Speke, following up the Nile to its source, discovered Lake Tanganyika, but could not prove it to be the reservoir of the Nile. Speke also discovered the Victoria Nyanza in the same year, and later in conjunction with Grant and Baker found the feeding places of the Nile in the Albert Nyanza and the Albert Edward Nyanza. Between 1849 and 1850 David Livingstone had traversed Africa from the Cape to the Zambesi and had crossed the continent from west to east. His attempt to discover the source of the Zambesi brought him to Lakes Tanganyika and Nyassa, where he endeavored to determine the watershed between the Nile and the rivers flowing into the Atlantic. In 1867-8 he discovered one of the head streams of the Congo without knowing that it was the Congo he touched. It was reserved for Stanley to sail from Nyangwe, where Livingstone had stopped, down

the Congo to the Atlantic. The voyage of Stanley was followed by activity among explorers in Central Africa. South Africa, the Soudan, the Sahara, were traversed and described repeatedly; and the path of the pioneer was followed by the trader and the colonist. At the end of the century nineteen-twentieths of the African continent was parcelled out among the European nations.

In 1800, three-fifths of the earth's surface was unknown to geographers. In 1900 less than ten per cent. of this territory was still mysterious.

COLONIZATION.—The rise and fall of colonial Powers during the 19th century were determined, for the most part, by the economic development of Europe and the United States. The growth of European industry and commerce was paralleled by the extension of European influence over the unenlightened portion of the globe. Those nations which based their prosperity on trade acquired new dependencies or developed old ones: those which lagged behind in industrial progress lost the possessions they held. In the 16th and 17th centuries colonies were looked upon as sources of revenue; in the 19th they came to be regarded as markets. Colonization, in its latest phase, means not so much the transportation of a European race to an unsettled land, as the acquisition of tracts of inhabited territory with the intention of opening new markets to the suzerain power.

In 1800 the great colonial nations were England, Spain, Portugal and the Netherlands. France had become practically of no importance; and though the immense territory of Louisiana came into her hands in 1801, it was passed on to the United States two years later. England's dependencies in 1800, comprised about three-quarters of the present extent of the British Empire. Omitting numerous small islands scattered over the globe, her acquisitions during the century were confined to Africa and the peninsulas of Hindustan and Farther India. The possessions of Spain rivalled those of England in importance, more even, than in area. Her American territory extended from Cape Horn over all of South America except Brazil, over Central America and Mexico and along the Pacific to the Oregon, or, if we include Louisiana which she held for a year into the 19th century, over all of what is now the United States west of Mississippi. In addition, Spain held Florida, Cuba and Porto Rico, and in the Pacific, the Philippine Islands. And while Great Britain's most extensive possessions, Canada and Australia, were practically huge, unpopulated tracts the Spanish colonies of America had behind them 300 years of development. Portugal's great possession was Brazil. Holland owned Java, Celebes, Sumatra, the Moluccas, and many smaller islands in the East Indies, which enriched the mother country with coffees and spices.

Of Spain's Colonial Empire there remained in 1900, nothing. The system of exploitation resulted in the overthrow of Spanish domination in continental America, within a period of 15 years, from 1810 to 1825. Insurrections in Cuba caused, in 1808, the intervention of the United States and ended in the loss to Spain of Cuba, Porto Rico and the Philippines. The sale of the Ladrone and Caroline Islands to Germany reduced the Spanish possessions to five islets in the Gulf of Guinea and two disputed strips of land on the west coast of Africa.

Portugal lost Brazil in 1822. In Africa her extensive but ill-defined claims were settled by conventions with European powers which gave her in Guinea, Angola and East Africa, territory amounting to 820,000 square miles, with a population of 8,000,000 Africans. The Netherlands acquired nearly 400,000 square miles in Borneo and New Guinea, but less than a million inhabitants with them. Their great work was done in the development of their old East Indian possessions, especially Java. With an area of something over 50,000 square miles, Java supported in 1900 a population of 27,000,000 Malays and Europeans, more than five times the number of Dutch in Holland. Under the "culture" system before 1870, and after that under a modified form of forced labor the inhabitants of Java were made to support themselves and to enrich the Netherlands. A strict but fair government, adapted to the character and institutions of the East Indian natives, kept 35,000,000 Malays contented and quiet under Dutch rule.

England, in India, in Africa, and in British America and Australia, increased her empire, one-third in area, four-fold in population, and nearly twenty-fold in wealth. Warfare in India up to 1856, added to her dominions, the Central Provinces, the Northwestern Provinces, Oudh, the Sind and the Punjab. The Sepoy Rebellion of 1857 caused the British government to take the control of India out of the hands of the East India Company. In 1877 the Empire of India was created, and in 1886 Burma was added to it. In 1900 England ruled directly over 250,000,000 natives in Hindustan and Burma, and indirectly over 60,000,000 others. In Australia, there arose out of a forlorn little settlement in New South Wales, the great colonies of New South Wales, Western Australia, South Australia, Victoria and Queensland; and in 1900 these, together with

Tasmania, were united into a federation of 5,000,000 white men occupying 2,970,000 square miles of territory. In Africa, Cape Colony was taken in 1806; by 1900, the British advance had swept over the two Dutch Republics north of the Orange, and had reached Lake Tanganyika in Central Africa, ready to join the second wave of English advance coming from the north, southward through Egypt. In New Zealand, New Guinea and Borneo, Ashanti, and in numerous islands of the ocean, the rule of England was established. Her colonial policy, opposed to that of Spain or Portugal, consisted essentially in the granting to colonists of as much independence and self-government as they were fit for, and in the endeavor to hold the colonies and the mother country together not by forced political bonds, but by the ties of common interest.

France and Germany, during the last decades of the century, following hard on the opening up of the Congo Basin and other parts of Central Africa, entered upon a vigorous career of expansion. The French had conquered Algeria between 1830 and 1848 and had been gradually extending their influence over Tunis and the oases of Sahara south of Algeria. After 1880 they crossed the great desert and subdued a vast country in the Valley of the Congo, Dahomey, and the Ivory Coast, and increased their strength in Senegal. They subjugated Madagascar in 1886, and established their authority in Tonquin, Cochin China, Cambodia and Annam, all in Farther India. Germany gained territory on the Gulf of Guinea, in Southwest Africa, in the eastern part of the continent and in Polynesia. The United States was busy at the end of the century in enforcing its supremacy in the Philippines. France and Germany followed in general the old Spanish and French system of governing colonies from a home office, with as little autonomy as possible given to the colonists. The character of their subjects, however, wild peoples almost entirely, justified in measure such a course. As for the United States, at the end of the century it had its colonial policy still to determine.

POPULATION OF THE UNITED STATES BY STATES AND TERRITORIES, AT EACH CENSUS, 1790-1900.

STATES.	1700.	1800.	1830.	1840.	1850.	1860.	1870.	1880.	1890.	1900.	Rank.	Per cent. increase 1890 to 1900.
Alabama	257,946	8,251,092	19,277,001	590,756	774,823	984,901	996,092	1,992,505	1,513,017	1,898,697	15	30.8
Arkansas	59,066	64,273	14,255	97,574	200,927	436,450	560,371	864,064	1,191,944	1,911,944	25	18.25
California			30,388	97,574	29,597	370,933	560,371	864,064	1,191,944	1,911,944	25	32.9
Colorado						34,273	560,371	864,064	1,191,944	1,911,944	25	32.9
Connecticut	261,942	2,715,116	14,255	97,574	200,927	436,450	560,371	864,064	1,191,944	1,911,944	25	32.9
Delaware	72,674	12,749	22	75,075	370,792	460,171	527,474	692,700	768,438	938,355	29	21.7
Florida				75,075	11,332	119,216	224,115	336,408	448,438	588,446	39	9.6
Georgia				44,477	87,446	146,383	224,115	336,408	448,438	588,446	39	35.0
Idaho	232,483	840,993	11	601,392	906,185	1,657,386	1,184,060	1,539,180	1,897,393	2,910,393	12	81.7
Illinois						1,657,386	1,184,060	1,539,180	1,897,393	2,910,393	12	81.7
Indiana						1,171,931	2,520,971	3,934,971	4,891,931	5,891,931	47	59.0
Iowa						1,171,931	2,520,971	3,934,971	4,891,931	5,891,931	47	59.0
Kansas						1,171,931	2,520,971	3,934,971	4,891,931	5,891,931	47	59.0
Kentucky	73,677	290,955	9	773,898	992,405	1,153,994	1,891,011	1,646,006	1,686,935	2,470,173	19	15.5
Louisiana						1,153,994	1,891,011	1,646,006	1,686,935	2,470,173	19	15.5
Maine	96,540	131,719	1	352,411	517,782	698,973	938,915	938,936	1,167,986	1,981,986	36	5.0
Maryland	318,728	341,548	6	447,040	588,034	698,973	938,915	938,936	1,167,986	1,981,986	36	5.0
Massachusetts	378,787	423,845	5	472,682	588,034	698,973	938,915	938,936	1,167,986	1,981,986	36	5.0
Michigan						1,231,916	1,457,931	1,793,935	2,098,935	2,900,935	6	58.3
Minnesota						1,231,916	1,457,931	1,793,935	2,098,935	2,900,935	6	58.3
Mississippi						1,231,916	1,457,931	1,793,935	2,098,935	2,900,935	6	58.3
Missouri						1,231,916	1,457,931	1,793,935	2,098,935	2,900,935	6	58.3
Montana						1,231,916	1,457,931	1,793,935	2,098,935	2,900,935	6	58.3
Nebraska						1,231,916	1,457,931	1,793,935	2,098,935	2,900,935	6	58.3
Nevada						1,231,916	1,457,931	1,793,935	2,098,935	2,900,935	6	58.3
New Hampshire	141,935	193,458	11	214,460	244,022	344,022	444,022	544,022	644,022	744,022	7	7.5
New Jersey	194,139	244,022	15	344,022	444,022	544,022	644,022	744,022	844,022	944,022	8	9.3
New York	244,022	344,022	15	444,022	544,022	644,022	744,022	844,022	944,022	1,044,022	9	10.4
North Carolina	244,022	344,022	15	444,022	544,022	644,022	744,022	844,022	944,022	1,044,022	9	10.4
North Dakota	388,751	433,163	3	553,500	688,889	737,967	837,967	937,967	1,037,967	1,137,967	11	74.7
Ohio						2,098,935	2,900,935	3,900,935	4,900,935	5,900,935	41	13.9
Oregon						2,098,935	2,900,935	3,900,935	4,900,935	5,900,935	41	13.9
Pennsylvania	484,373	692,393	9	1,047,507	1,346,293	1,846,293	2,346,293	2,846,293	3,346,293	3,846,293	32	19.9
Rhode Island	68,935	69,292	7	70,981	70,981	70,981	70,981	70,981	70,981	70,981	33	94.0
South Carolina	249,073	349,073	6	449,073	549,073	649,073	749,073	849,073	949,073	1,049,073	33	94.0
South Dakota						1,137,967	1,637,967	2,137,967	2,637,967	3,137,967	37	21.1
Tennessee	35,691	103,692	15	261,727	422,771	581,295	741,819	902,343	1,062,867	1,223,391	37	14.3
Texas						1,062,867	1,223,391	1,383,915	1,544,439	1,704,963	37	86.4
Utah						1,062,867	1,223,391	1,383,915	1,544,439	1,704,963	37	86.4
Vermont	85,425	154,465	13	217,895	289,966	362,037	434,108	506,179	578,250	650,321	40	8.8
Virginia	747,610	860,530	1	974,600	1,065,116	1,155,632	1,246,148	1,336,664	1,427,180	1,517,696	43	13.0
Washington						1,155,632	1,246,148	1,336,664	1,427,180	1,517,696	43	46.5
West Virginia						1,155,632	1,246,148	1,336,664	1,427,180	1,517,696	43	28.7
Wisconsin						1,155,632	1,246,148	1,336,664	1,427,180	1,517,696	43	53.4
Wyoming						1,155,632	1,246,148	1,336,664	1,427,180	1,517,696	43	63.4
Total population of slave....	3,029,814	5,204,890	7,215,838	17,019,041	23,079,648	31,374,735	39,983,199	49,784,795	63,116,411	74,611,005	...	...

u. *Indica* territory.

b. Approximate population of present area of North Dakota.

Dakota territory population given under North Dakota

POPULATION OF THE UNITED STATES BY STATES AND TERRITORIES, AT EACH CENSUS, 1790-1900.

TERRITORIES.	1790.	Rank.	1800.	Rank.	1810.	Rank.	1820.	Rank.	1830.	Rank.	1840.	Rank.	1850.	Rank.	1860.	Rank.	1870.	Rank.	1880.	Rank.	1890.	Rank.	Per cent. increase 1890 to 1900.
Alaska.....																			33,436	..	38,032	51	98.4
Arizona.....																			40,440	44	59,020	49	104.9
District of Columbia.....																			177,024	36	230,394	39	278,718
Hawaii.....																			131,700	34	230,394	39	20.9
Indian Territory.....																			9	89,960	9	154,001	
New Mexico.....																			180,182	..	381,990	30	41.2
Oklahoma.....																			117.5	..	381,990	30	117.5
Philippine Islands.....																			119,565	41	153,593	43	27.2
Porto Rico.....																			91,874	37	195,310	45	54.2
Indians, etc., on In- dian reservations, except Indian Territory.....																			61,884	46	898,331	38	544.2
Persons on public ships in the ser- vice of the United States or stationed abroad.....																			728,000,000	..	16.0
Total population of Territories.....																			145,268
Total population of the United States (A).....																			89,070
Total per cent. in- crease per decade.....																			952,945	4	1,693,794
																			63,069,756	..	70,804,799
																			24.86	..	20.98
																			30.06
																			22.63
																			38,558,371
																			50,155,783
																			168,596
																			233,223
																			371,055
																			952,945	4	1,693,794
																			63,069,756	..	70,804,799
																			24.86	..	20.98
																			30.06
																			22.63
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																			63,069,756	..	70,804,799
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																			24.86	..	20.98
																			30.06
																			22.63
																			38,558,371
																			50,155,783
																			168,596

4. Census taken as of Nov. 10, 1890, and not included in total. f. Increase from 1887 to 1889. g. Census by Hawaiian Government. h. Population estimated by Spanish authorities and not included in total. i. Not including Porto Rico and the Philippine Islands.

Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.	
	1900.	1890.		1900.	1890.		1900.	1890.
Buford t.....	1,852	496	Fort Valley t....	2,022	1,752	Sandersville c....	2,063	1,700
Camilla t.....	1,051	806	Gainesville c....	4,368	3,302	Savannah c.....	54,244	43,181
Carrollton t....	1,998	1,451	Greensboro c....	1,511	1,313	Seville t.....	1,277	980
Cartersville c..	3,135	3,171	Griffin c.....	6,857	4,503	Social Circle t....	1,225	753
Cedartown t....	2,823	1,625	Harmony Grovet	1,454	611	Sparta t.....	1,150	1,141
Cochran t.....	1,531		Hartwell t.....	1,672		Statesboro t.....	1,197	600
Columbus c....	17,614	17,303	Hawkinsville t..	2,103	1,755	Summersville t..	3,945	3,000
Conyers t.....	1,605	1,349	Hickson t.....	1,487	922	Talbotton t.....	1,131	1,140
Cordele t.....	3,473	1,578	Le Grange c....	4,374	3,690	Tallapoosa c....	2,129	1,600
Covington t....	2,062	1,823	Lithonia t.....	1,208	1,182	Tennille t.....	1,121	930
Cuthbert t....	2,641	2,323	Louisville t....	1,009	836	Thomaston t.....	1,714	1,180
Dahlonega t....	1,255	896	Lumpkin t.....	1,470		Thomasville t....	5,322	5,510
Dalton c.....	4,315	3,040	McRae t.....	1,020		Thomson t.....	1,154	580
Darien c.....	1,739	1,491	Macon c.....	23,272	22,746	Tifton t.....	1,384	
Dawson t.....	2,926	2,384	Madison c.....	1,992	2,131	Toccoa t.....	2,176	1,120
Decatur t.....	1,418	1,018	Marietta c.....	4,446	3,384	Trion t.....	1,925	800
Douglasville t.	1,140	863	Milledgeville c..	4,219	3,322	Valdosta c.....	5,613	2,850
Dublin c.....	2,987	862	Monroe c.....	1,146	958	Vienna t.....	1,035	530
Eastman t.....	1,235	1,082	Monticello t....	1,806	849	Warrenton t....	1,113	170
East Point t....	1,315	738	Moultrie t....	2,231		Washington v....	3,300	2,600
Easton c.....	1,823	1,682	Newnan c.....	3,654	2,859	Waycross t.....	5,919	3,325
Edgewood t....	1,285		Quitman t.....	2,981	1,988	Waynesboro v....	2,080	1,710
Elberton t....	3,834	1,572	Richland t.....	1,314	457	West Point c....	1,797	1,250
Fitzgerald c....	1,817		Rome c.....	7,391	6,957	Winder t.....	1,145	290
Forsyth c.....	1,172	920	Roswell t.....	1,329	1,136	Wrightsville t..	1,137	610
Fort Gaines t..	1,305	1,087						

Boise c.....	5,957	2,311	Malade v.....	1,050		Rexburg t.....	1,061	
Grangeville t.....	1,132	540	Montpellier c.....	1,444	1,174	Wallace c.....	2,265	
Idaho Falls c.....	1,362		Moscow t.....	2,484		Weiser c.....	1,864	
Lewiston c.....	2,425	819	Pocatello c.....	4,046				

Abingdon c.	2,022	1,321	Canton c.	6,574	5,604	Earlville c.	1,122	1,091
Abion v.	1,162	887	Carbondale c.	3,818	2,382	East Dubuque c.	1,146	1,048
Aledo c.	2,081	1,601	Carbon Hill c.	1,252		East Dundee v.	1,417	1,118
Altamont t.	1,385	1,044	Carlinville c.	3,502	3,226	East St. Louis c.	29,655	15,116
Alton c.	14,210	10,394	Carlyle c.	1,674	1,784	Edinburg v.	1,071	1,091
Amboy c.	1,826	2,357	Carmi c.	2,938	2,785	Edwardsville c.	4,157	3,561
Anna c.	2,618	2,235	Carpentersville v.	1,004	734	Effingham c.	3,774	3,300
Arcola c.	1,996	1,733	Carrollton c.	2,336	2,258	Eldorado t.	1,445	
Arlington			Carthage c.	1,749	969	Elgin c.	22,433	17,251
Highlights v.	1,380	1,424	Cartaget t.	2,704	1,634	Elmhurst v.	1,789	1,600
Ashland t.	1,201	1,045	Casey c.	1,500	848	Elmwood t.	1,562	1,241
Assumption v.	1,702	1,076	Centralia c.	6,721	4,763	El Paso c.	1,441	1,120
Astoria t.	1,684	1,337	Cerro Gordo v.	1,006	939	Eureka c.	1,061	1,635
Athens c.	1,535	914	Champaign c.	9,098	5,532	Evanson c.	19,259	
Atlanta c.	1,370	1,173	Charleston c.	5,488	4,135	Fairbury c.	2,167	2,330
Atubura v.	1,281	874	Chenaworth t.	1,631	1,326	Fairfield c.	1,388	
Augusta v.	1,149	1,077	Chenoa c.	1,512	1,226	Farmer c.	1,264	1,064
Aurora c.	21,147	19,688	Chester c.	2,832	2,706	Farmington c.	1,729	1,573
Averyville v.	1,573		Chicago c.	1,006,575	1,009,850	Flora c.	2,311	1,161
Barrington v.	1,573	848	Chicago Heights v.	1,039		Foreston t.	1,047	1,120
Barry c.	1,643	1,354	Chillicothe c.	1,632	1,632	Fort Sheridan v.	1,575	1,575
Batavia c.	3,871	3,543	Clinton c.	4,452	2,698	Freeburg v.	1,714	980
Beardstown c.	4,827	4,226	Coal City.	2,807	1,672	Freeport c.	13,338	10,139
Belleville c.	17,484	15,361	Cobden v.	1,084	994	Fulton c.	2,685	2,090
Belvidere c.	0,987	3,887	Cochester c.	1,635	1,643	Galesa c.	5,006	6,320
Bement v.	1,484	1,129	Colfax v.	1,153		Galesburg c.	18,007	15,300
Benton v.	1,341	939	Collinsville c.	4,021	3,498	Galva t.	2,688	2,400
Bloomington c.	23,286	20,454	Columbia t.	1,197	1,367	Gardens v.	1,086	1,400
Blue Island v.	6,114	3,329	Crotty v.	1,086	1,190	Geneseo c.	3,256	4,119
Braceville v.	1,669	2,150	Cuba c.	1,198	1,114	Genoa v.	2,446	1,900
Bradley v.	1,518		Danville c.	16,354	11,491	Germantown v.	1,149	1,149
Braldwood c.	3,279	4,611	Decatur c.	20,754	16,841	Gibson c.	2,004	1,580
Breesee v.	1,571	808	DeKalb c.	5,904	2,579	Gilman c.	1,441	1,113
Brooklyn v.	1,019		Des Plaines c.	1,304	1,176	Girard c.	1,020	1,300
Banker Hill c.	1,279	1,369	Deo Plains v.	1,666	986	Glencoe v.	1,080	1,100
Bushnell c.	2,490	2,314	Dixon c.	7,917	5,161	Gloucester v.	1,169	1,174
Byron v.	1,015	698	Dolton v.	1,929	1,119	Golconda v.	3,182	1,182
Cauro c.	12,566	10,324	Doungers Grove v.	2,108	960	Granville c.	1,943	1,943
Cambridge v.	1,345	940	Duquoin c.	4,353	4,062	Greenfield c.	1,068	1,111
Camp Point v.	1,260	1,150	Dwight v.	2,015	1,354			

ILLINOIS—Continued.

Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.	
	1900.	1890.		1900.	1890.		1900.	1890.
Greenup v.....	1,065	858	Milford v.....	1,077	957	Robinson c.....	1,688	1,267
Greenview v.....	1,019	1,106	Millstadt v.....	1,172	1,186	Rochelle c.....	2,073	1,789
Greenville c.....	2,504	1,868	Minonk c.....	2,545	2,316	Rock Falls c.....	2,176	1,900
Griggsville c.....	1,404	1,400	Moline c.....	17,248	12,000	Rockford c.....	31,051	23,564
Groesdale v.....	1,111	.....	Momence c.....	2,026	1,695	Rock Island c.....	19,498	13,684
Hamilton c.....	1,344	1,301	Monmouth c.....	7,460	5,936	Roodhouse c.....	2,351	2,260
Harlem v.....	4,085	.....	Monticello c.....	1,982	1,643	Roseville v.....	1,014	788
Harrisburg t.....	2,202	1,738	Morgan Park v.....	2,329	1,027	Rossville v.....	1,485	679
Harvard c.....	2,602	1,967	Morris c.....	4,273	3,653	Rushville c.....	2,222	2,061
Harvey c.....	5,395	.....	Morrison c.....	2,308	2,068	St. Anne v.....	1,000	718
Havana c.....	3,268	2,535	Mound c.....	2,705	.....	St. Charles c.....	2,675	1,690
Henry c.....	1,637	1,512	Mt. Carmel c.....	4,311	3,376	St. Elmo t.....	1,050	354
Herrin c.....	1,559	.....	Mt. Carroll c.....	1,965	1,836	Salem c.....	1,642	1,403
Highland c.....	1,970	1,857	Mt. Morris v.....	1,048	895	Sandoval v.....	1,258	624
Highland Park c.....	2,906	2,163	Mt. Olive v.....	2,935	1,986	Sandwich c.....	2,520	2,516
Hillsboro c.....	1,937	.....	Mt. Pulaski c.....	1,643	1,357	Savanna c.....	3,325	3,097
Hinsdale v.....	2,578	1,584	Mt. Sterling t.....	1,960	1,655	Shawneetown c.....	1,698	.....
Homerville v.....	1,080	917	Mt. Vernon c.....	5,216	3,293	Sheffield v.....	1,265	993
Hoopeston c.....	3,823	1,911	Moweaqua v.....	1,478	848	Shelbyville c.....	3,546	3,162
Hackensville c.....	15,078	12,935	Murphysboro c.....	6,463	3,890	Sheldon v.....	1,103	910
Herseyville c.....	3,517	8,207	Naperville c.....	2,629	2,216	Sorento v.....	1,000	638
Holt c.....	29,353	23,264	Nashville c.....	2,184	2,064	Sparta c.....	2,941	1,979
Honesboro c.....	1,130	.....	Nauvoo c.....	1,321	1,208	Springfield c.....	34,159	24,968
Canby v.....	1,004	894	Neoga v.....	1,126	829	Spring Valley c.....	6,214	3,637
Canakee c.....	13,595	9,025	Newman c.....	1,166	990	Stanton c.....	2,780	2,309
Cannons v.....	1,049	1,037	Newton c.....	1,630	1,428	Sterling c.....	6,309	5,234
Carthage c.....	1,566	1,494	Nilwood v.....	1,378	.....	Streator c.....	14,079	11,414
Cewanee c.....	8,382	4,569	Nokomis c.....	1,371	1,305	Sullivan c.....	2,399	1,406
Cincinnati c.....	1,221	1,045	Normal t.....	3,795	8,459	Sumner c.....	1,268	1,037
Cirkwood v.....	1,008	949	North Chicago v.....	1,150	.....	Sycamore c.....	3,653	2,967
Clinchville c.....	1,857	1,738	North Peoria v.....	2,358	1,096	Taylorville c.....	4,248	2,989
Clifton c.....	1,601	1,649	North Union v.....	1,150	1,094	Toloca c.....	2,629	.....
Cliff v.....	1,324	.....	Oakland c.....	1,198	995	Toulon t.....	1,057	945
Clifford v.....	3,969	2,314	Odell v.....	1,000	800	Trenton c.....	1,706	1,364
Clarksburg c.....	1,591	1,113	Odin v.....	1,180	817	Troy c.....	1,080	936
Clarks Forest c.....	2,215	1,203	O'Fallon v.....	1,267	865	Tuscola c.....	2,562	1,897
Clark c.....	1,306	1,295	Olney c.....	4,260	3,881	Upper Alton c.....	2,373	1,903
Clasalle c.....	10,446	9,855	Onarga v.....	1,270	994	Urbana c.....	5,728	3,511
Clawrenceville c.....	1,300	895	Oquawka v.....	1,010	.....	Vandalia c.....	2,665	2,144
Clendon v.....	1,812	1,636	Oregon c.....	1,577	1,566	Venice c.....	2,450	982
Clifton v.....	2,449	.....	Ottawa c.....	10,588	9,985	Vermont v.....	1,195	1,158
Clint t.....	1,252	1,270	Palatine v.....	1,020	891	Vienna c.....	1,217	998
Clroy c.....	1,629	1,258	Pana c.....	5,530	5,077	Virgen c.....	2,280	1,610
Clwistown c.....	2,504	2,166	Paris c.....	6,105	4,996	Virginia c.....	1,600	1,402
Clinton c.....	1,415	1,187	Park Ridge v.....	1,340	987	Warren v.....	1,327	1,173
Clinton c.....	8,962	6,725	Paxton c.....	3,036	2,187	Warsaw t.....	2,335	2,721
Clitchfield c.....	5,918	5,811	Pecatonica v.....	1,045	1,059	Washington c.....	1,459	1,301
Clcockport v.....	2,659	2,449	Pekin c.....	8,420	6,347	Waterloo c.....	2,114	1,860
ClHenry v.....	1,013	979	Peoria c.....	50,100	41,034	Waukegan c.....	2,605	2,017
ClLeansboro c.....	1,758	1,355	Peotone v.....	1,003	717	Waukegan c.....	9,426	4,915
Clcomb c.....	5,875	4,062	Peru c.....	6,863	5,550	Waverly c.....	1,573	1,337
Cladison v.....	1,979	.....	Petersburg c.....	2,407	2,342	Wenona c.....	1,486	1,053
Clarengo c.....	2,005	1,445	Pickneyville c.....	2,357	1,298	West Chicago v.....	1,877	1,506
Clarion c.....	2,510	1,338	Pittsfield c.....	2,293	2,205	West Dundee v.....	1,348	873
Clarissa v.....	1,086	876	Plano c.....	1,634	1,825	West Hammond v.....	2,935	.....
Clarao c.....	1,213	1,164	Polo c.....	1,869	1,728	Westville v.....	1,605	.....
Clarselles c.....	2,559	2,345	Pontiac c.....	4,266	2,784	Wheaton c.....	2,945	1,682
Clarshall c.....	2,077	1,900	Princeton c.....	4,023	3,896	Whitehall c.....	2,030	1,981
Clartinsville v.....	1,000	779	Prophetstown t.....	1,148	694	Willmette v.....	2,300	1,458
Clascoutah c.....	2,171	2,032	Quincy c.....	36,252	31,494	Wilmette v.....	1,420	1,576
Clason c.....	1,890	1,869	Rantoul v.....	1,207	1,074	Winchester c.....	1,711	1,543
Clatton c.....	9,622	6,883	Redbud c.....	1,169	1,176	Winnetka v.....	1,888	1,679
Claywood v.....	4,532	.....	Ridgely v.....	1,169	1,007	Winstanley	.....	.....
Clrose Park v.....	2,592	.....	River Forest v.....	1,539	.....	Woodstock c.....	1,055	.....
Clendota c.....	3,736	3,542	Riverside v.....	1,531	.....	Wyoming c.....	2,502	1,683
Clropolis c.....	4,069	3,573	Riverton v.....	1,511	1,127		1,277	1,116

INDIANA.

Abany t.....	2,116	571	Auburn c.....	3,396	2,415	Brazil c.....	7,786	5,905
Abion t.....	1,384	1,229	Aurora c.....	3,645	3,929	Bremen t.....	1,071	1,076
Alexandria c.....	7,221	715	Batesville t.....	1,384	1,189	Brookville t.....	2,037	2,086
Anderson c.....	20,178	10,741	Bedford c.....	6,115	3,851	Brownstown t.....	1,685	1,422
Angola t.....	3,141	1,840	Bern t.....	1,037	544	Butler t.....	2,063	2,521
Arcadia t.....	1,413	670	Bloomfield t.....	1,588	1,229	Cambridge City t.....	1,734	1,752
Argos t.....	1,307	1,101	Bloomington c.....	6,460	4,018	Cannelton c.....	2,186	1,991
Arley t.....	1,040	.....	Bluffton v.....	4,476	3,589	Carthage t.....	1,028	462
Atlanta t.....	1,000	.....	Boonville t.....	2,849	1,881	Cicero t.....	1,603	681
Attica c.....	3,405	2,830	Bourbon t.....	1,187	1,064	Clarksville t.....	2,870	1,693

INDIANA—Continued.

Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.	
	1900.	1890.		1900.	1890.		1900.	1890.
Clay City v.....	1,503	1,004	Jonesboro t.....	1,838	687	Petersburg t.....	1,751	1,494
Clinton c.....	2,918	1,365	Kendallville c....	3,354	2,960	Plymouth c.....	3,656	2,723
Columbia City....	2,975	3,027	Kentland t.....	1,006	918	Port Fulton t....	1,101	1,294
Columbus c.....	8,130	6,719	Knightstown t....	1,942	1,867	Portland c.....	4,788	3,775
Connersville c....	6,886	4,548	Knightsville t....	1,171	1,148	Princeton c.....	6,041	3,073
Converse t.....	1,415	921	Knox t.....	1,466	790	Redkey t.....	2,206	923
Corydon t.....	1,610	880	Kokomo c.....	10,609	8,261	Remington t.....	1,139	769
Covington c.....	2,213	1,891	Ladoga t.....	1,176	857	Bensselaer c....	2,255	1,435
Crawfordsville c.	6,649	6,089	Lafayette c.....	18,116	16,349	Richmond c.....	18,226	16,028
Crown Point t....	2,336	1,907	Lagrange t.....	1,763	1,784	Ridgeville t.....	1,098	782
Danville t.....	1,802	1,569	Laporte c.....	7,113	7,126	Rising Sun c....	1,548	1,699
Decatur c.....	4,142	3,142	Lawrenceburg c..	4,326	4,384	Rochester t.....	3,421	2,487
Delphi c.....	2,135	1,923	Lebanon c.....	4,465	3,682	Rockport t.....	2,882	2,234
Dunkirk c.....	3,187	1,024	Liberty t.....	1,449	1,314	Rockville c.....	2,045	1,699
East Chicago c....	3,411	1,255	Loganier c.....	9,231	2,195	Rushville c.....	4,541	3,475
Eaton t.....	1,567	.....	Linton c.....	3,071	958	Salem t.....	1,565	1,275
Edinburg t.....	1,820	2,031	Logansport c....	16,204	13,328	Scottsburg t....	1,274	438
Elkhart c.....	15,184	11,360	Loogootee t.....	1,382	988	Seymour c.....	6,445	5,327
Elwood c.....	12,950	2,284	Lowell t.....	1,275	761	Shelbyville c....	7,169	5,431
Evansville c.....	59,007	50,756	Madison c.....	7,835	8,936	Sheridan t.....	1,795	1,134
Fairmount t.....	3,205	1,462	Marion c.....	17,387	8,769	South Bend c....	35,999	21,239
Flora t.....	1,269	639	Martinsville c....	4,038	2,680	South Whitley v.	1,112	730
Fortville t.....	1,006	683	Michigan City....	14,850	10,776	Spencer c.....	2,025	1,893
Fort Wayne c....	45,115	25,393	Midletown t.....	1,801	851	Sullivan t.....	3,118	1,223
Fowler t.....	1,429	1,285	Mishawaka c....	5,560	3,371	Summitville t....	1,432	722
Frankfort c.....	7,100	5,919	Mitchell t.....	1,772	1,583	Swayzee t.....	1,162	.....
Franklin c.....	4,005	3,781	Monon t.....	1,160	1,064	Tell City.....	2,680	2,094
Frankton t.....	1,464	530	Montezuma t.....	1,172	668	Terre Haute c....	36,673	30,217
Garrett c.....	3,910	2,767	Monticello t.....	3,107	1,518	Thorntown t....	1,511	1,230
Gas City.....	3,622	145	Montpelier c....	3,405	808	Tipton c.....	3,764	2,697
Geneva t.....	1,076	748	Mt. Vernon c....	5,132	4,705	Union City.....	2,716	2,681
Goodland t.....	1,305	889	Muncie c.....	20,942	11,345	Upland t.....	1,208	.....
Goshen c.....	7,810	6,033	Nappanee t.....	2,208	1,493	Valparaiso c....	6,890	5,090
Greencastle c....	3,661	4,390	New Albany c....	20,628	21,059	Veedsburg t....	1,638	930
Greensfield c....	4,489	3,100	Newburg t.....	1,371	1,045	Vevay c.....	1,588	1,033
Greensburg c....	5,034	3,596	New Castle t....	3,406	2,697	Vincennes c....	10,249	8,233
Greenwood t.....	1,287	721	New Harmony t....	1,341	1,197	Wabash c.....	5,618	5,105
Hammond c.....	15,503	862	Noblesville c....	4,792	3,054	Walkerton t....	1,037	865
Hartford City....	12,376	5,428	North.....	.....	.....	Warren t.....	1,523	1,120
Hobart t.....	1,390	1,010	Manchester t....	2,398	2,384	Warsaw c.....	3,987	3,574
Hope t.....	1,088	1,009	North Vernon c..	2,823	2,012	Washington c....	8,551	6,004
Howell t.....	1,421	.....	Oakland City t..	1,991	1,534	Waterloo t.....	1,444	1,473
Huntingburg c....	2,527	3,167	Orleans t.....	1,236	857	West Lafayette t.	2,302	1,343
Huntington c....	9,491	7,328	Osgood t.....	1,035	841	Whiting t.....	3,983	1,428
Indianapolis c....	169,164	105,436	Owensville t....	1,019	759	Williamsport c..	1,245	1,087
Irvington t.....	1,799	650	Pawlet t.....	1,186	707	Winamac t.....	1,684	1,215
Jasper t.....	1,863	1,281	Pendleton t.....	1,512	996	Winchester c....	3,705	3,014
Jeffersonville c..	10,774	10,666	Peru c.....	8,463	7,028	Worthington t..	1,448	1,448

INDIAN TERRITORY.

Ardmore t.....	5,681	.....	Lehigh t.....	1,500	.....	So. McAlester t..	3,479	.....
Chickasha t.....	3,209	.....	Marlow t.....	1,016	.....	Sulphur Springs t.	1,198	.....
Coalgate t.....	2,614	.....	Miami t.....	1,527	.....	Tahlequah t.....	1,422	.....
Davis t.....	1,346	.....	Muscogee t.....	4,264	.....	Tulsa t.....	1,390	.....
Duncan t.....	1,164	.....	Pauls Valley t..	1,467	.....	Vinita t.....	2,539	.....
Durant t.....	2,969	.....	Poteau t.....	1,182	.....	Wagoner t.....	2,372	.....
Hartshorne t....	2,362	.....	Purcell t.....	2,277	.....	Wynnewood t....	1,907	.....

IOWA.

Ackley t.....	1,445	1,286	Bellevue c.....	1,607	1,364	Charles City.....	4,227	2,808
Adel t.....	1,213	995	Belmond c.....	1,234	803	Cherokee c.....	3,865	3,441
Afton t.....	1,178	1,045	Bloomfield c....	2,105	1,913	Cincinnati t....	1,212	482
Akron t.....	1,029	494	Boone c.....	8,890	6,580	Clarinda c.....	3,276	3,282
Albia c.....	2,889	2,859	Britt t.....	1,540	818	Clarion c.....	1,475	74
Algona c.....	2,911	2,068	Brooklyn t.....	1,188	1,203	Clear Lake t....	1,706	1,130
Alton t.....	1,009	708	Burlington c....	23,201	22,565	Clinton c.....	22,608	13,619
Ames c.....	2,422	1,276	Calmar t.....	1,003	813	Colfax t.....	2,053	97
Anamosa c.....	2,891	2,078	Carroll c.....	2,892	2,448	Columbus Junc-	.....	.....
Atlantic c.....	5,045	4,351	Cascade t.....	1,266	965	tion t.....	1,089	88
Audubon t.....	1,866	1,810	Cedar Falls c....	5,319	3,450	Coon Rapids t..	1,017	573
Avoca t.....	1,627	.....	Cedar Rapids c..	25,666	18,090	Corning t.....	2,145	1,662
Bedford c.....	1,977	1,643	Centerville c....	5,266	3,668	Corydon t.....	1,477	962
Belle Plaine c...	3,288	2,623	Chariton c.....	3,980	3,129	Council Bluffs c.	25,802	21,474

IOWA—Continued.

Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.	
	1900.	1890.		1900.	1890.		1900.	1890.
Cresco c.....	2,806	2,018	Lake City.....	2,709	1,100	Perry c.....	3,986	2,880
Creston c.....	7,752	7,200	Lake Mills t.....	1,293	604	Red Oak c.....	4,355	3,321
Davenport c.....	35,254	26,872	Lamoni t.....	1,540	.....	Reinbeck t.....	1,208	731
Decorah c.....	3,246	2,801	Lansing c.....	1,438	1,698	Rockford t.....	1,080	1,010
Denison c.....	2,771	1,782	Laporte t.....	1,419	1,052	Rock Rapids t.....	1,766	1,394
Des Moines.....	62,139	50,093	Le Mars c.....	4,146	4,086	Rock Valley t.....	1,054	542
Dewitt c.....	1,833	1,359	Lenox t.....	1,014	706	Rockwell City t.....	1,222	516
Dubuque c.....	36,297	30,311	Leon t.....	1,905	1,422	Sabula c.....	1,029	918
Dunlap t.....	1,355	1,088	Logan t.....	1,377	827	Sac City t.....	2,079	1,349
Dyersville t.....	1,323	1,372	Lucas t.....	1,132	1,330	Sanborn t.....	1,247	1,075
Eagle Grove c.....	3,557	1,881	McGregor c.....	1,498	1,160	Seymour t.....	1,703	1,058
Eddyville t.....	1,290	815	Madrid t.....	1,021	565	Sheldon c.....	2,282	1,478
Eldon t.....	1,850	1,725	Malvern t.....	1,166	1,003	Shenandoah c.....	3,573	2,440
Eldora c.....	2,223	1,577	Manchester c.....	2,887	2,344	Sibley t.....	1,389	1,090
Elkader t.....	1,321	745	Manning t.....	1,169	1,233	Sidney t.....	1,143	839
Emmetsburg c.....	2,361	1,584	Manson t.....	1,424	822	Sigourney c.....	1,052	1,523
Estherville c.....	3,237	1,475	Mapleton t.....	1,099	782	Sioux City.....	33,111	37,306
Fairfield c.....	4,659	3,391	Maquoketa c.....	3,777	3,077	Sioux Rapids t.....	1,005	650
Farmington t.....	1,332	1,002	Marengo c.....	2,007	1,710	Spencer c.....	3,095	1,813
Fayette t.....	1,515	1,082	Marion c.....	4,102	3,094	Spirit Lake t.....	1,219	782
Fonda t.....	1,180	625	Marshalltown c.....	11,544	8,914	State Center t.....	1,008	854
Forest City t.....	1,758	885	Mason City.....	6,746	4,007	Storm Lake t.....	2,169	1,682
Fort Dodge c.....	12,162	4,871	Missouri Valley c.....	4,010	2,737	Story City t.....	1,197	536
Fort Madison c.....	9,278	7,901	Montezuma t.....	1,210	1,062	Strawberry Point t.....	1,012	947
Garner t.....	1,288	679	Monticello c.....	2,104	1,398	Stuart c.....	2,079	2,052
Glenwood c.....	3,040	1,890	Moulton t.....	1,430	769	Sumner t.....	1,437	861
Grand Junction t.....	1,113	932	Mt. Ayr t.....	1,729	1,355	Tama c.....	2,649	1,741
Greene t.....	1,192	845	Mt. Pleasant c.....	4,109	3,997	Tipton c.....	2,513	1,599
Greenfield t.....	1,300	1,048	Mt. Vernon t.....	1,629	1,259	Toledo c.....	1,941	1,836
Grinnell c.....	3,860	3,332	Muscateine c.....	14,073	11,454	Trair t.....	1,458	1,014
Grundy Center t.....	1,322	1,161	Mystic t.....	1,758	875	Valley Junction t.....	1,700	.....
Guthrie Center t.....	1,193	1,037	Nashua t.....	1,268	1,240	Villisca c.....	2,211	1,744
Guttenberg t.....	1,620	1,160	Nevada c.....	2,472	1,062	Vinton c.....	3,499	2,865
Hamburg c.....	2,079	1,634	New Hampton t.....	2,339	1,314	Wapello c.....	1,398	1,009
Hampton c.....	2,727	2,067	New London t.....	1,003	580	Washington c.....	4,255	3,235
Harlan t.....	2,422	1,765	New Sharon t.....	1,252	1,026	Waterloo c.....	12,580	6,074
Hartley t.....	1,006	519	Newton c.....	3,682	2,564	Waukon t.....	2,153	1,610
Hawarden t.....	1,810	744	Nora Springs t.....	1,309	846	Waverly c.....	3,177	2,346
Hedrick t.....	1,035	592	Northwood t.....	1,371	859	Webster City.....	4,613	2,829
Humboldt t.....	1,474	1,075	Odebolt t.....	1,432	1,122	West Burlington t.....	1,044	826
Ida Grove t.....	1,967	1,563	Oelwein c.....	5,142	830	West Liberty t.....	1,690	1,268
Independence c.....	3,656	3,163	Onawa t.....	1,933	1,358	West Union c.....	1,935	1,676
Indianola c.....	3,261	2,254	Orange City t.....	1,457	1,346	What Cheer c.....	2,746	3,246
Iowa City.....	7,987	7,016	Osage c.....	2,734	1,913	Williamsburg t.....	1,100	635
Iowa Falls t.....	2,840	1,796	Oskola c.....	2,505	2,120	Wilton t.....	1,233	1,212
Jefferson c.....	2,601	1,875	Oskaloosa c.....	9,212	6,558	Winterset c.....	3,039	2,281
Keokuk c.....	14,641	14,101	Ottumwa c.....	18,197	14,001	Woodbine t.....	1,255	815
Keosauqua t.....	1,117	831	Parkersburg t.....	1,164	760			
Knoxville c.....	3,131	2,632	Pella c.....	2,623	2,408			

KANSAS.

Abilene c.....	3,507	3,547	Empire c.....	2,258	923	Kansas City.....	51,418	33,316
Anthony c.....	1,179	1,806	Emporia c.....	8,223	7,551	Kingman c.....	1,785	2,890
Argentine c.....	5,878	4,762	Erie c.....	1,111	1,176	Lacyne c.....	1,087	1,136
Arkansas City...	6,140	8,347	Eureka c.....	2,091	2,259	Larned c.....	1,568	1,861
Atchison c.....	15,722	13,963	Florence c.....	1,178	1,229	Lawrence c.....	10,863	9,997
Angusta c.....	1,197	1,243	Fort Scott c.....	10,322	11,946	Leavenworth c.....	20,735	19,768
Baldwin c.....	1,017	935	Frankfort c.....	1,167	1,053	Lincoln c.....	1,262	1,100
Baxter Springs c.....	1,641	1,248	Fredonia c.....	1,650	1,515	Lindsborg c.....	1,279	968
Belleville c.....	1,833	1,968	Frontenac c.....	1,905	600	Lyndon c.....	1,004	935
Beloit c.....	2,359	2,454	Galena c.....	10,155	2,496	Lyons c.....	1,736	1,754
Blue Rapids c.....	1,100	936	Garden c.....	1,590	1,490	McPherson c.....	2,966	3,172
Burlingame c.....	1,436	1,472	Garnett c.....	2,078	2,191	Manhattan c.....	3,438	3,004
Burlington c.....	2,418	2,239	Girard c.....	2,473	2,541	Marion c.....	1,824	2,047
Caldwell c.....	1,574	1,642	Goodland c.....	1,059	1,027	Marysville c.....	2,006	1,913
Chanute c.....	4,208	2,826	Great Bend c.....	2,470	2,450	Minneapolis c.....	1,727	1,756
Cherokee c.....	1,296	1,087	Harper c.....	1,151	1,579	Neodesha c.....	1,773	1,528
Cherryvale c.....	3,472	2,104	Hays c.....	1,136	1,242	Newton c.....	6,206	5,605
Chetopa c.....	2,019	2,265	Herington c.....	1,607	1,353	Nickerson c.....	1,038	1,662
Clay Center c.....	3,069	2,802	Hiawatha c.....	2,829	2,486	Norton c.....	1,202	1,074
Clyde c.....	1,157	1,137	Holton c.....	3,062	2,727	Olathe c.....	3,451	3,294
Coffeyville c.....	4,953	2,282	Horton c.....	3,898	3,816	Osage c.....	2,792	3,469
Columbus c.....	2,310	2,160	Howard c.....	1,207	1,015	Osawatomie c.....	4,191	2,662
Concordia c.....	3,401	3,184	Humboldt c.....	1,402	1,361	Osborne c.....	1,075	1,174
Council Grove c.....	2,365	2,211	Hutchinson c.....	9,379	8,662	Oswego c.....	2,306	2,574
Dodge c.....	1,942	1,763	Independence c.....	4,851	3,127	Ottawa c.....	6,294	6,245
El Dorado c.....	3,466	3,339	Iola c.....	5,791	1,706	Paola c.....	3,144	2,943
Ellsworth c.....	1,549	1,690	Junction c.....	4,695	4,502	Parsons c.....	7,662	6,736

KANSAS—Continued.

Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.	
	1900.	1890.		1900.	1890.		1900.	1890.
Peabody c.....	1,369	1,474	Salina c.....	8,074	6,149	Topeka c.....	23,608	31,687
Phillipsburg c.....	1,008	992	Scammon c.....	1,549	748	Valley Falls c.....	1,078	1,790
Pittsburg c.....	10,112	6,697	Scranton c.....	1,099	1,572	Wamego c.....	1,616	1,673
Pleasanton c.....	1,097	1,132	Sedan c.....	1,067	970	Washington c.....	1,576	1,613
Pratt c.....	1,213	1,418	Seneca c.....	1,846	2,082	Weir c.....	2,977	2,136
Rosedale c.....	3,270	2,276	Smith Center c.....	1,142	767	Wellington c.....	4,245	4,201
Russell c.....	1,143	961	Stafford c.....	1,088	649	Wichita c.....	24,671	23,563
Sabetha c.....	1,646	1,393	Sterling c.....	2,002	1,641	Winfield c.....	5,554	5,194
St. Marys c.....	1,390	1,174	Stockton c.....	1,030	849	Yates Center c.....	1,694	1,395
St. Paul c.....	1,047	1,097	Strong c.....	1,128	976			

KENTUCKY.

Ashland c.....	6,800	4,195	Flemingsburg t.....	1,968	1,172	Morganfield c.....	2,046	1,604
Augusta c.....	1,718	1,447	Frankfort c.....	9,487	7,692	Mt. Sterling c.....	3,561	3,629
Barbourville t.....	1,010	1,162	Franklin c.....	2,166	2,324	Mt. Washington t.....	1,093	287
Bardotown c.....	1,711	1,594	Fulton c.....	2,860	1,619	Murray c.....	1,822	518
Bardwell t.....	1,512	678	Georgetown t.....	3,322	.....	Newport c.....	23,307	24,918
Bellevue c.....	6,332	2,163	Glasgow c.....	2,019	2,051	Nicholasville c.....	2,332	2,157
Bowling Green c.....	8,226	7,813	Greenville c.....	1,051	962	Owensboro c.....	13,139	9,537
Campbellsville c.....	1,341	1,018	Harrodsburg c.....	2,676	2,330	Owenton t.....	1,014	847
Carlisle t.....	1,377	1,081	Hawesville c.....	1,041	1,012	Paducah c.....	19,446	12,737
Carrollton c.....	2,205	1,730	Henderson c.....	10,372	8,835	Paris c.....	4,603	4,218
Catlettsburg c.....	3,081	1,874	Hickman t.....	1,589	1,632	Pineville t.....	2,072	.....
Central City t.....	1,348	1,144	Hopkinsville c.....	7,380	5,832	Princeton t.....	2,536	1,667
Central Covington t.....	2,155	961	Lancaster c.....	1,640	.....	Providence t.....	1,937	522
Clinton c.....	1,468	1,347	Lafayette c.....	1,882	.....	Richmond c.....	4,653	5,073
Cloverport c.....	1,656	1,527	Lawrenceburg c.....	1,233	1,882	Russellville c.....	2,591	2,232
Columbus c.....	1,235	673	Lebanon c.....	3,043	2,816	Seebree t.....	1,477	923
Corbin t.....	1,544	.....	Lexington c.....	26,389	21,567	Shelbyville c.....	3,016	2,673
Covington c.....	42,936	37,371	London t.....	1,147	.....	Somersett c.....	3,354	2,035
Cynthiana c.....	3,257	3,016	Louisville c.....	1,099	834	Springfield t.....	1,016	642
Davton c.....	4,285	3,796	Louisville c.....	204,731	161,129	Stanford c.....	1,651	1,333
Dayton c.....	6,104	4,964	Ludlow t.....	3,324	2,460	Stargis t.....	1,258	387
Derlington c.....	3,012	1,748	Madisonville c.....	3,623	3,312	Uniontown c.....	1,532	1,087
Edinburgh c.....	1,210	680	Marion c.....	1,064	840	Vanceburg t.....	1,161	1,139
Elizabethtown c.....	1,661	2,220	Mayfield c.....	4,081	2,909	Versailles c.....	2,337	.....
Elkton c.....	1,123	1,158	Maysville c.....	6,423	5,358	West Covington t.....	1,002	1,757
Eminence c.....	1,018	1,002	Middlesboro t.....	4,122	.....	Williamsburg c.....	1,495	1,323
Falmouth c.....	1,134	1,146	Midway c.....	1,045	1,185	Winchester c.....	5,964	4,519
			Morehead t.....	1,100	491			

LOUISIANA.

Abbeville t.....	1,536	637	Kenner c.....	1,253	953	Opelousas t.....	2,951	1,572
Alexandria t.....	5,648	2,861	Kentwood t.....	1,313	.....	Plaquemine t.....	3,590	3,222
Amite t.....	1,547	1,510	Lafayette t.....	3,314	2,106	Rayne t.....	1,007	569
Baton Rouge c.....	11,269	10,478	Lake Charles t.....	6,680	3,442	Roseland t.....	1,320	261
Covington t.....	1,205	976	Lake Providence t.....	1,256	642	Ruston t.....	1,394	757
Crowley t.....	4,214	480	Leesville t.....	1,148	.....	St. Francisville t.....	1,059	940
Donaldsonville t.....	4,105	3,121	Mandeville t.....	1,029	1,012	St. Martinsville v.....	1,996	1,314
Franklin t.....	2,692	2,127	Minden t.....	1,561	1,398	Shreveport c.....	16,612	11,979
Hammond t.....	1,511	692	Monroe c.....	5,426	3,256	Slidell t.....	1,129	264
Homer c.....	1,167	1,132	Morgan City.....	2,332	2,291	Thibodaux t.....	3,353	2,678
Houma t.....	3,212	1,280	Natchitoches t.....	2,388	1,310	Vidalia t.....	1,022	621
Jackson t.....	2,612	1,270	New Iberia t.....	6,815	3,447	Washington t.....	1,337	1,464
Jeanerette t.....	1,905	1,303	New Orleans c.....	287,104	242,659	White Castle t.....	1,350	483
Jennings t.....	1,539	412						

MAINE.

Anburn c.....	12,951	11,250	Ellsworth c.....	4,297	4,904	Portland c.....	50,146	38,425
Augusta c.....	11,693	10,527	Fairfield v.....	2,238	2,130	Presque Isle v.....	1,254	1,202
Bangor c.....	21,850	19,103	Farmington v.....	1,251	1,243	Rockland c.....	6,199	6,174
Bath c.....	10,477	8,723	Port Fairfield v.....	1,469	.....	Rumford v.....	2,546	.....
Belfast c.....	4,615	5,294	Gardiner c.....	5,501	5,431	Saco c.....	6,122	6,663
Biddeford c.....	16,145	14,443	Hallowell c.....	2,714	3,181	Skowhegan v.....	4,266	.....
Brewer c.....	4,835	4,193	Lewiston c.....	23,761	21,701	South Paris v.....	1,437	1,164
Bridgton v.....	1,552	.....	Madison v.....	1,850	.....	South Portland c.....	6,257	.....
Brunswick v.....	2,321	.....	Norway v.....	2,034	1,737	Waterville c.....	6,477	7,367
Calais c.....	7,655	7,299	Old Town c.....	5,763	5,512	Westbrook c.....	7,236	6,682
Eastport c.....	5,311	4,908	Pittsfield v.....	2,208	1,597			

MARYLAND.

Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.	
	1900.	1890.		1900.	1890.		1900.	1890.
Annapolis c.....	8,402	7,604	Easton t.....	3,074	2,939	Oxford t.....	1,243	1,135
Baltimore c.....	508,057	434,439	Elkton t.....	2,542	2,318	Pocomoke t.....	2,194	1,884
Berlin t.....	1,246	974	Ellicott City.....	1,331	1,498	Port Deposit t.....	1,575	1,908
Brunswick t.....	2,471	.....	Frederick c.....	9,296	8,193	Rockville t.....	1,110	1,558
Cambridge t.....	5,747	4,198	Frostburg t.....	5,274	3,804	St. Michaels t.....	1,043	1,329
Centerville t.....	1,331	1,309	Froststown c.....	13,591	10,118	Salisbury t.....	4,277	2,905
Chesapeake t.....	1,172	1,155	Hager de Grace c.....	3,423	3,244	Sharpsburg t.....	1,080	1,163
Chestertown t.....	3,008	2,632	Hyattsville t.....	1,222	1,500	Snow Hill t.....	1,596	1,453
Chesfield t.....	3,165	1,565	Laurel t.....	2,079	1,984	Westernport v.....	1,998	1,526
Cumberland c.....	17,128	12,729	Lonaconing v.....	2,181	.....	Westminster L.....	3,199	2,908
East New Market t.....	1,267	.....	Oakland t.....	1,170	1,046	Williamsport t.....	1,472	1,277

MASSACHUSETTS.

Beverly c.....	13,884	10,821	Holyoke c.....	45,712	35,637	North Adams c.....	94,900	16,074
Boston c.....	560,892	443,477	Lawrence c.....	62,559	44,654	Northampton c.....	18,643	14,960
Brockton c.....	40,063	27,294	Lowell c.....	94,969	77,696	Pittsfield c.....	21,796	17,231
Cambridge c.....	91,886	79,028	Lynn c.....	68,513	55,727	Quincy c.....	23,609	16,723
Chelsea c.....	94,072	27,909	Malden c.....	33,664	23,031	Salem c.....	35,956	30,901
Chicopee c.....	19,167	14,050	Marlboro c.....	13,809	13,805	Somerville c.....	61,643	40,132
Everett c.....	24,336	11,098	Medford c.....	18,244	11,079	Springfield c.....	62,059	44,179
Fall River c.....	104,863	74,398	Melrose c.....	12,962	8,519	Taunton c.....	31,036	25,448
Fitchburg c.....	31,521	22,037	New Bedford c.....	62,442	40,733	Waltham c.....	37,461	18,707
Glooucester c.....	26,121	24,651	Newburyport c.....	14,478	13,947	Woburn c.....	14,234	13,499
Haverhill c.....	37,175	27,412	Newton c.....	33,587	24,379	Worcester c.....	118,421	84,653

MICHIGAN.

Adrian c.....	9,054	8,756	East Tawas c.....	1,736	2,300	Ladington c.....	7,166	7,517
Albion c.....	4,519	3,753	Eaton Rapids c.....	2,103	1,970	Manitoulin v.....	1,229	1,305
Algonac v.....	1,216	.....	Escanaba c.....	9,549	6,808	Manchester v.....	1,300	1,191
Allegan v.....	2,667	2,069	Essexville v.....	1,639	1,545	Manistee c.....	14,330	12,812
Alma v.....	2,047	1,653	Evart v.....	1,360	1,359	Manistee v.....	4,126	2,940
Alpena c.....	11,802	11,383	Penton v.....	2,408	2,182	Marechal v.....	1,055	890
Ann Arbor c.....	14,569	9,431	Flint c.....	13,103	9,803	Marquette c.....	3,820	3,368
An Sable c.....	1,116	4,388	Frankfort v.....	1,465	1,175	Marquette c.....	10,058	9,093
Bad Axe v.....	1,341	842	Freemont v.....	1,331	1,097	Marshall c.....	4,370	3,968
Bangor v.....	1,021	904	Gaylord v.....	1,561	661	Mason c.....	1,828	1,875
Baraga v.....	1,185	.....	Glendon c.....	3,380	1,737	Menominee c.....	12,818	10,630
Battle Creek c.....	18,563	13,197	Grand Haven c.....	4,743	5,025	Midland c.....	2,393	2,277
Bay City.....	27,625	27,839	Grand Legue c.....	2,161	1,606	Midland v.....	1,141	917
Belding c.....	3,382	1,730	Grand Rapids c.....	87,565	60,278	Midland v.....	1,108	1,138
Bellaire v.....	1,137	.....	Greenville c.....	3,381	3,056	Monroe c.....	5,043	5,258
Belleuve v.....	1,074	914	Hancock v.....	4,050	1,772	Montrose v.....	1,512	.....
Benton Harbor c.....	6,569	3,692	Harbor Beach v.....	1,149	1,046	Morenci v.....	1,334	1,243
Bessemer c.....	3,911	2,566	Harbor Springs v.....	1,643	1,052	Mt. Clemens c.....	6,576	4,748
Big Rapids c.....	4,686	5,303	Hart v.....	1,134	757	Mt. Morris v.....	1,470	351
Birmingham v.....	1,170	899	Hartford v.....	1,077	1,044	Mt. Pleasant c.....	3,662	2,701
Blissfield v.....	1,268	1,132	Hastings c.....	3,172	2,972	Munising v.....	2,014	.....
Bronson v.....	1,176	875	Hillsdale c.....	4,151	3,915	Muskegon c.....	20,818	22,702
Buchanan v.....	1,708	1,994	Holland c.....	7,790	3,945	Muskegon Heights v.....	1,012	.....
Cadillac c.....	5,997	4,461	Holly v.....	1,419	1,266	Nashville v.....	1,164	1,029
Caro v.....	2,066	1,701	Homer v.....	1,097	1,063	Negaunee c.....	6,955	6,078
Cass City v.....	1,113	813	Houghton v.....	3,359	2,092	Newaygo v.....	1,172	1,330
Cassopolis v.....	1,330	1,369	Howard City v.....	1,398	1,137	Newberry v.....	1,421	1,115
Central Lake v.....	1,307	.....	Howell v.....	2,518	2,387	Niles c.....	4,287	4,197
Charlevoix v.....	2,079	1,496	Hudson c.....	2,403	2,178	Northville v.....	1,755	1,573
Charlotte c.....	4,092	3,867	Inlay City v.....	1,122	1,251	Norway c.....	4,170	.....
Cheboygan c.....	6,489	6,235	Ionia c.....	5,309	4,482	Onaway v.....	1,304	.....
Chelsea v.....	1,635	1,356	Iron Mountain c.....	9,242	8,599	Ontonagon v.....	1,267	.....
Chesaning v.....	1,244	1,056	Iron River v.....	1,482	1,117	Oscoda v.....	1,109	3,696
Clarke c.....	1,326	1,174	Ironwood c.....	9,705	7,745	Osego v.....	2,073	1,626
Clinton v.....	1,038	900	Ishteping c.....	13,255	11,197	Ovid v.....	1,299	1,422
Coldwater c.....	6,216	5,247	Ithaca v.....	2,020	1,627	Owosso c.....	8,066	6,564
Coleman v.....	1,014	540	Jackson c.....	25,180	20,798	Oxford v.....	1,172	1,128
Constantine v.....	1,220	1,340	Jonesville v.....	1,367	1,288	Paw Paw v.....	1,465	1,391
Corunna c.....	1,510	1,382	Kalamazoo c.....	24,404	17,863	Pentwater v.....	1,061	1,510
Crystal Falls c.....	3,231	.....	Kalkaska v.....	1,394	1,161	Petoskey c.....	5,285	2,872
Decatur v.....	1,356	1,109	Lake Landon v.....	2,507	1,892	Plainwell v.....	1,318	1,414
Delray v.....	4,573	.....	Lake Odessa v.....	1,037	695	Plymouth v.....	1,474	1,172
Detroit c.....	285,704	205,878	Laings c.....	16,485	13,102	Pontiac c.....	9,799	6,200
Dowagiac c.....	4,151	2,806	Lapeer c.....	3,297	2,793	Port Huron c.....	19,153	13,543
Dundee v.....	1,118	1,166	Laurina v.....	5,643	1,189	Portland v.....	1,874	1,678
Durand v.....	2,134	255	Leslie v.....	1,114	1,058	Quincy v.....	1,563	1,250
East Jordan v.....	1,305	731	Lowell v.....	1,736	1,829			

MICHIGAN—Continued.

Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.	
	1900.	1890.		1900.	1890.		1900.	1890.
Reading v.....	1,096	.....	St. Louis c.....	1,989	2,946	Union City v.....	1,514	1,136
Red Jacket v.....	4,668	8,073	Sault Ste. Marie c.....	10,533	5,760	Vassar v.....	1,832	1,628
Reed City v.....	2,051	1,776	Sebewaing v.....	1,843	719	Wakenfeld v.....	1,191	.....
Richmond v.....	1,133	1,074	Shelby v.....	1,051	994	Wayne v.....	1,851	1,226
River Rouge v.....	1,748	.....	South Haven v.....	4,009	1,994	West Bay City.....	13,119	12,951
Rochester v.....	1,535	900	Sparta v.....	1,126	904	West Branch v.....	1,412	1,312
Romeo v.....	1,580	1,657	Stanton c.....	1,294	1,353	Whitehall v.....	1,451	1,923
Saginaw c.....	42,345	46,323	Sturgis c.....	2,465	2,439	Williamston v.....	1,113	1,129
St. Charles v.....	1,317	.....	Tawas City.....	1,323	1,544	Wyandotte c.....	5,183	3,317
St. Clair c.....	2,543	2,853	Tecumseh v.....	2,400	2,310	Yale v.....	1,135	927
St. Ignace c.....	2,271	2,704	Three Rivers c.....	3,550	3,131	Ypsilanti c.....	7,373	6,129
St. Johns v.....	3,388	3,127	Traverse City.....	9,407	4,833	Zeeland v.....	1,236	735
St. Joseph c.....	5,155	3,733	Trenton v.....	1,167	739			

MINNESOTA.

Ada v.....	1,353	623	Janesville v.....	1,354	921	Rushford c.....	1,062	903
Adrian v.....	1,258	671	Jordan c.....	1,370	1,233	St. Charles c.....	1,204	1,173
Aitkin v.....	1,719	737	Kasson c.....	1,113	992	St. Cloud c.....	8,653	7,626
Albert Lea c.....	4,500	3,305	Kenyon v.....	1,902	666	St. James v.....	2,607	929
Alexandria v.....	2,631	2,118	Lake City.....	2,744	2,123	St. Louis Park v.....	1,335	499
Anoka c.....	3,792	4,333	Lake Crystal v.....	1,315	824	St. Paul c.....	163,065	133,135
Appleton v.....	1,184	994	Lanesboro v.....	1,102	896	St. Peter c.....	4,302	3,671
Austin c.....	5,474	3,901	Le Sueur b.....	1,937	1,763	Sandstone v.....	1,139	517
Barnesville c.....	1,326	1,059	Litchfield v.....	2,290	1,999	Sank Center c.....	2,220	1,685
Belle Plaine b.....	1,121	814	Little Falls c.....	5,774	2,354	Sank Rapids v.....	1,391	1,135
Bemidji v.....	2,133	.....	Long Prairie v.....	1,385	.....	Shaeopee c.....	2,047	1,737
Benson v.....	1,535	877	Luverne v.....	2,223	1,466	Sleepy Eye v.....	2,046	1,513
Biwabik v.....	1,299	.....	Madelia v.....	1,373	852	South St. Paul c.....	2,322	2,233
Blue Earth City.....	2,900	1,569	Madison v.....	1,236	625	South Stillwater v.....	1,422	1,204
Brainerd c.....	7,534	5,703	Mankato c.....	10,590	8,323	Springfield v.....	1,511	716
Breckenridge v.....	1,292	655	Mapleton v.....	1,008	607	Spring Valley v.....	1,770	1,231
Buffalo v.....	1,040	606	Marshall v.....	2,093	1,303	Staples v.....	1,504	.....
Caladonia v.....	1,175	927	Melrose c.....	1,763	730	Stillwater c.....	12,313	11,369
Canby v.....	1,100	470	Milaca v.....	1,204	404	Thief River Falls c.....	1,319	191
Cannon Falls v.....	1,239	1,073	Minneapolis c.....	203,718	164,733	Tower c.....	1,366	1,110
Chaska c.....	2,165	2,210	Montevideo.....	2,146	1,437	Tracy c.....	1,911	1,499
Chateauf v.....	1,436	1,335	Moorehead c.....	3,730	2,063	Two Harbors v.....	3,273	.....
Cloquet v.....	3,072	2,530	Morris v.....	1,934	1,266	Virginia c.....	2,932	2,457
Crookston c.....	5,359	3,457	New Prague c.....	1,223	955	Wabasha c.....	2,523	2,457
Detroit v.....	2,000	1,510	New Ulm c.....	5,408	3,741	Wadena v.....	1,520	895
Duluth c.....	52,969	33,115	North Branch v.....	1,211	685	Warren c.....	1,276	643
East Grand Forks c.....	2,077	795	Northfield c.....	3,310	2,659	Waseca c.....	3,103	2,433
Ely c.....	3,717	901	North St. Paul v.....	1,110	1,099	Waterville c.....	1,360	927
Evelevh v.....	2,752	.....	Ortonville c.....	1,247	.....	Wells v.....	2,017	1,203
Fairmont v.....	3,040	1,205	Owatonna c.....	5,551	3,849	West Minneapo- lis v.....	1,648	1,596
Fairbault c.....	7,868	6,520	Park Rapids v.....	1,313	634	West St. Paul c.....	1,820	1,596
Fergus Falls c.....	6,072	3,772	Pelican Rapids v.....	1,033	694	Wheaton v.....	1,132	823
Frazee v.....	1,000	.....	Perham v.....	1,133	761	White Bear Lake v.....	1,933	1,236
Glencoe v.....	1,730	1,649	Pipestone v.....	2,536	1,232	Willmar v.....	3,409	1,823
Glenwood v.....	1,116	627	Plainview v.....	1,038	.....	Windom v.....	1,944	835
Grand Rapids v.....	1,428	.....	Preston v.....	1,278	.....	Winnebago City v.....	1,816	1,133
Granite Falls c.....	1,214	.....	Princeton v.....	1,319	816	Winona c.....	12,714	12,323
Hastings c.....	3,811	3,705	Red Lake Falls c.....	1,335	774	Worthington v.....	2,336	1,164
Hibbing v.....	2,481	.....	Red Wing c.....	7,535	6,394	Zumbrota v.....	1,119	867
Hutchinson v.....	2,495	1,414	Redwood Falls c.....	1,651	1,233			
Jackson v.....	1,756	730	Renville v.....	1,075	413			
			Rochester c.....	6,843	5,321			

MISSISSIPPI.

Aberdeen c.....	3,434	3,449	Greenville t.....	7,642	6,658	Meridian c.....	14,050	16,024
Amory t.....	1,211	739	Greenwood c.....	3,023	1,055	Natchez c.....	12,210	10,101
Bay St. Louis c.....	2,872	1,974	Grenada t.....	2,563	2,416	New Albany t.....	1,033	545
Biola c.....	5,467	3,334	Gulfport t.....	1,060	.....	Ocean Springs t.....	1,353	1,145
Booneville t.....	1,050	748	Hattiesburg t.....	4,173	1,173	Okolona t.....	2,177	2,059
Brookhaven t.....	2,678	2,142	Hazlehurst t.....	1,579	.....	Oxford c.....	1,935	1,346
Canton c.....	3,404	2,131	Holly Springs c.....	2,815	2,246	Pass Christian t.....	2,089	1,795
Clarksdale t.....	1,773	791	Jackson c.....	7,816	5,930	Pontotoc t.....	1,010	535
Columbus c.....	6,484	4,559	Kosciusko t.....	2,073	1,394	Port Gibson t.....	2,113	1,394
Corinth c.....	3,661	2,111	Laurel t.....	3,133	.....	Sardis t.....	1,002	1,044
Cystal Springs v.....	1,093	997	Lexington t.....	1,516	1,075	Scranton t.....	2,253	1,253
Durant t.....	1,796	1,359	Lumberton t.....	1,509	.....	Senatobia t.....	1,156	1,677
Ellisville t.....	1,899	961	McComb t.....	4,477	2,333	Starkville t.....	1,936	1,735
Floresia v.....	1,422	.....	Macon t.....	2,037	1,505	Summit t.....	1,499	1,537
Gloster t.....	1,661	1,142	Magnolia t.....	1,033	676	Tupelo t.....	2,118	1,477

MISSISSIPPI—Continued.

Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.	
	1900.	1890.		1900.	1890.		1900.	1890.
Vicksburg c.....	14,884	13,373	West Point t....	3,193	2,762	Woodville t.....	1,043	950
Water Valley c..	3,513	2,882	Winona t.....	2,455	1,648	Yazoo City.....	4,944	3,286
Wesson t.....	3,279	3,168						

MISSOURI.

Albany c.....	2,025	1,334	Greenville c.....	1,051	.....	Odessa c.....	1,445	1,272
Appleton c.....	1,133	1,081	Hamilton c.....	1,804	1,641	Oregon c.....	1,032	948
Ash Grove c.....	1,039	1,350	Hannibal c.....	12,780	12,857	Oronogo c.....	2,073	.....
Aurora c.....	6,191	3,482	Harrisonville c..	1,844	1,645	Oseola c.....	1,037	995
Belton c.....	1,005	988	Hermann t.....	1,575	1,410	Pacific c.....	1,213	1,184
Bethany c.....	2,093	1,105	Higbee c.....	1,151	1,093	Palmyra c.....	2,323	2,515
Bevier c.....	1,808	876	Higginsville c..	2,791	2,342	Paris c.....	1,397	1,487
Bloomfield c..	1,475	.....	Holden c.....	2,126	2,520	Pattonburg t....	1,005	532
Bolivar c.....	1,869	1,485	Humansville c..	1,055	791	Pierce City.....	2,151	2,511
Boonville c.....	4,377	4,141	Huntsville c.....	1,805	1,836	Plattsburg c.....	1,878	1,634
Bowling Green c	1,302	1,564	Independence c..	6,974	6,880	Pleasant Hill t..	2,002	2,217
Breckenridge c..	1,012	763	Jackson c.....	1,658	941	Poplar Bluff c..	4,321	2,187
Brookfield c.....	5,484	4,547	Jefferson City...	9,664	6,742	Princeton c.....	1,575	1,410
Brunswick c.....	1,403	1,748	Joplin c.....	26,023	9,943	Rich Hill c.....	4,053	4,008
Butler c.....	3,158	2,812	Kahoka c.....	1,818	1,425	Richmond c.....	3,478	2,835
California c.....	2,181	1,772	Kansas City.....	163,752	132,716	Rockport t.....	1,080	934
Cameron c.....	2,979	2,917	Kennett c.....	1,509	302	Rolla c.....	1,600	1,592
Canton t.....	2,365	2,241	Keytesville c.....	1,127	819	St. Charles c.....	7,982	6,161
Cape Girardeau c	4,815	4,297	Kirksville c.....	5,966	3,510	St. Genevieve c..	1,707	1,586
Carl Junction c..	1,177	699	Kirkwood t.....	2,825	1,777	St. Joseph c.....	102,979	52,324
Carrollton c.....	3,854	3,878	La Grange c.....	1,507	1,250	St. Louis c.....	575,238	451,770
Cartersville c..	4,445	2,884	Lamar c.....	2,737	2,860	Salem c.....	1,481	1,315
Carthage c.....	9,416	7,981	La Plata c.....	1,345	1,169	Salisbury c.....	1,847	1,672
Cantharville c..	2,315	230	Lathrop c.....	1,118	1,082	Sarcoux c.....	1,136	1,172
Centralia c.....	1,722	1,375	Lebanon c.....	2,125	2,218	Savannah c.....	1,886	1,288
Charleste c.....	1,893	1,381	Lees Summit c..	1,453	1,369	Sedalia c.....	15,231	14,008
Chillicothe c.....	6,905	5,717	Lexington c.....	4,190	4,537	Seneca c.....	1,043	1,101
Clarence c.....	1,184	1,078	Liberty c.....	2,407	2,558	Shelbina c.....	1,733	1,691
Clinton c.....	5,061	4,737	Louisiana c.....	5,131	5,090	Sikeston c.....	1,077	636
Columbia c.....	5,651	4,000	Macon c.....	4,068	3,371	Slater c.....	2,502	2,400
Deepwater c.....	1,301	1,102	Malden v.....	1,462	943	Springfield c...	23,297	21,850
De Soto c.....	5,611	3,960	Marceline c.....	2,638	1,977	Stanberry c.....	2,654	2,035
Dexter c.....	1,862	792	Marionville c..	1,290	1,159	Sweet Springs c..	1,080	1,137
Doniphan c.....	1,508	609	Marshall c.....	5,086	4,297	Tarkio c.....	1,901	1,156
Edina c.....	1,605	1,456	Maryville c.....	4,577	4,037	Thayer v.....	1,276	1,143
Eldorado			Memphis c.....	2,195	4,780	Tipton c.....	1,337	1,253
Excelsior			Mexico c.....	5,099	4,789	Trenton c.....	5,396	5,039
Excelsior Springs c	2,137	1,543	Milant t.....	1,757	1,234	Troy c.....	1,153	971
Farmington c.....	1,881	2,064	Moberly c.....	8,012	8,215	Unionville c.....	2,050	1,118
Farmington c.....	1,778	1,394	Monett c.....	3,115	1,690	Vandalia c.....	1,168	979
Fayette c.....	2,717	2,247	Monroe City.....	1,929	1,830	Versailles c.....	1,240	1,211
Ferguson c.....	1,015	.....	Montgomery c...	2,026	2,199	Warrensburg c...	4,724	4,706
Festus c.....	1,256	1,335	Mound c.....	1,681	1,193	Washington c.....	3,015	2,725
Fredericktown c	1,577	917	Mountain Grove c	1,004	830	Webb City.....	2,201	5,043
Fulton c.....	4,833	4,314	Mt. Vernon c.....	1,306	782	Webster Groves c	1,895	1,793
Gallatin c.....	1,780	1,489	Neosho c.....	2,725	2,198	Wellsville c.....	1,160	1,138
Glasgow c.....	1,672	1,781	Nevada c.....	7,461	7,262	Weston c.....	1,019	1,134
Granby c.....	2,315	1,400	New Franklin t..	1,156	132	West Plains c...	2,902	2,091
Grant City.....	1,406	1,186	New Madrid c...	1,489	1,193	Willow Springs c	1,078	1,535
Greenfield c.....	1,406	998	Norborne v.....	1,189	1,005	Windsor c.....	1,502	1,427

MONTANA.

Anaconda c.....	9,458	3,975	Fort Benton t....	1,094	634	Lewistown v.....	1,096	.....
Billings c.....	3,321	836	Great Falls c...	14,930	3,979	Livingston c.....	2,778	2,860
Bozeman c.....	3,419	2,143	Hamilton t.....	1,857	.....	Miles City.....	1,928	956
Butte c.....	30,470	10,723	Havre t.....	1,035	.....	Missoula c.....	4,936	3,456
Deer Lodge t.....	1,324	1,463	Helena c.....	10,770	18,934	Red Lodge t.....	2,162	694
Dillon c.....	1,530	1,012	Kalspel c.....	2,526	.....	Walkerville c....	2,621	1,743

NEBRASKA.

Albion v.....	1,369	926	Beatrice c.....	7,975	13,836	Columbus c.....	3,522	3,124
Alliance c.....	2,536	829	Blair c.....	2,970	2,069	Crete c.....	2,199	2,310
Ashland v.....	1,477	1,601	Broken Bow c...	1,375	1,647	David City.....	1,845	2,028
Auburn c.....	2,664	1,537	Central City.....	1,571	1,368	Edgar c.....	1,040	1,105
Aurora c.....	1,321	1,862	Chadron c.....	1,665	1,967	Fairbury c.....	3,140	2,680

NEBRASKA—Continued.

Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.	
	1900.	1890.		1900.	1890.		1900.	1890.
Fairfield c.....	1,208		Minden c.....	1,288	1,890	Sidney t.....	1,001	
Falls City.....	3,022	2,109	Nebraska City...	7,390	11,941	South Omaha c...	26,004	8,697
Fremont c.....	7,241	6,747	Neligh c.....	1,195	1,209	Stanton c.....	1,022	897
Friend v.....	1,300	1,347	Norfolk c.....	3,883	3,038	Stromsburg c.....	1,154	
Fullerton c.....	1,464		North Bend c.....	1,010	897	Superior c.....	1,577	1,614
Geneva c.....	1,534	1,580	North Platte c.....	3,640	3,055	Sutton c.....	1,365	1,541
Grand Island c...	7,554	7,536	Oakland v.....	1,008	807	Tecumseh c.....	2,005	1,454
Hastings c.....	7,188	13,584	Omaha c.....	102,555	140,452	Tekamah c.....	1,597	1,344
Havelock v.....	1,480		O'Neill c.....	1,107	1,226	University		
Hebron c.....	1,511	1,502	Ord c.....	1,372	1,308	Wahoo v.....	1,180	571
Holdrege v.....	3,007	2,601	Pawnee v.....	1,969	1,550	Wayne t.....	2,100	2,095
Humboldt c.....	1,218	1,114	Plattsmouth c...	4,984	8,392	Weeping Water c	2,119	1,173
Kearney c.....	5,634	8,074	Ponca c.....	1,048	1,009	West Point c...	1,156	1,350
Lexington c.....	1,343	1,392	Red Cloud c.....	1,554	1,594	Wilber v.....	1,890	1,603
Lincoln c.....	40,169	55,154	St. Paul c.....	1,475	1,263	Wymore c.....	1,054	1,395
McCook c.....	2,445	2,346	Schuyler c.....	2,157	2,160	York c.....	2,692	2,499
Madison c.....	1,479	980	Seward c.....	1,970	2,108		5,128	2,495

NEVADA.

Carson City.....	2,100	3,960	Reno t.....	4,500	3,563	Virginia City....	2,685	8,511
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NEW HAMPSHIRE.

Berlin c.....	8,896	8,729	Keene c.....	9,165	7,446	Portsmouth c...	10,637	9,837
Concord c.....	19,638	17,004	Laconia c.....	8,042	6,143	Rochester c.....	8,466	7,396
Dover c.....	13,307	12,780	Manchester c.....	56,987	44,126	Somersworth c...	7,023	6,397
Franklin c.....	5,946	4,069	Nashua c.....	23,898	19,311			

NEW JERSEY.

Asbury Park c...	4,148		Hackettstown t...	2,474	2,417	Paterson c.....	105,171	78,347
Atlantic City...	27,838	18,055	Haddonfield b...	2,770	2,502	Pennsgrove b.....	1,895	
Atlantic High- lands b.....	1,383	945	Hammononton t...	3,481	3,633	Perth Amboy c...	17,699	9,512
Bayonne c.....	32,722	19,083	Harrison t.....	10,590	8,338	Phillipsburg t...	10,022	8,444
Belvidere t.....	1,784	1,789	Hasbrouck			Plainfield c.....	15,369	11,267
Beverly c.....	1,950	1,957	Heights b.....	1,255		Pleasantville b...	2,132	
Bloomfield t...	9,698	7,708	Hawthorne b...	2,096		Port Oram b.....	2,009	775
Boonton t.....	3,901	2,961	High Bridge b...	1,377		Princeton b.....	3,890	3,422
Bordentown c...	4,110	4,232	Highlands b...	1,228		Rahway c.....	7,985	7,405
Boundbrook b...	2,622	1,462	Hightstown b...	1,749	1,875	Raritan t.....	3,244	2,556
Bridgeton c...	13,913	11,424	Hoboken c.....	59,364	43,648	Red Bank t.....	5,423	4,445
Burlington c...	7,392	7,204	Irvingtown t...	5,235		Ridgewood v.....	2,685	1,667
Caldwell b.....	1,367		Jamesburg b...	1,063	887	Riverton b.....	1,332	1,675
Camden c.....	75,935	58,313	Jersey City...	206,433	168,003	Rockaway b.....	1,423	
Cape May c...	2,257	2,136	Kearney t.....	10,996		Roselle b.....	1,632	886
Carlstadt b...	2,574	1,549	Keyport t.....	3,413	3,411	Rutherford b....	4,411	2,293
Chatham b.....	1,361	780	Lambertville c...	4,637	4,142	Salem c.....	5,811	5,575
Clayton b.....	1,951	1,807	Lodi b.....	1,240	781	Seabright b.....	1,194	
Collingswood b.	1,633	539	Long Branch t...	1,917	998	Secaucus b.....	1,626	
Deckertown b...	1,306	993	Madison c.....	3,754	2,469	Somerville t.....	4,843	3,951
Dover t.....	5,938		Manasquan b...	1,500	1,506	South Amboy b...	6,349	4,330
Dunellen b...	1,239	1,000	Matawan b.....	1,511	1,491	South Orange v.	4,604	3,108
East Newark b...	2,500		Merchantville b.	1,008	1,225	South River b...	2,792	1,795
East Orange c...	21,506	13,282	Metuchen b...	1,786	779	Summit c.....	5,392	3,898
East Rutherford b	2,640	1,438	Midland Park b.	1,348		Tenafly b.....	1,746	1,045
Egg Harbor c...	1,808	1,439	Millville c.....	10,563	10,002	Trenton c.....	73,307	57,493
Elizabeth c...	52,130	37,764	Montclair t...	13,962	8,656	Undercliff b...	1,006	
Elmer b.....	1,140	842	Morrisstown t...	11,267	8,156	Union t.....	15,187	10,643
Englewood c...	6,253		Neptune City b...	1,009		Vineland b.....	2,779	790
Fairview b.....	1,003		Newark c.....	240,070	181,830	Vineland b.....	4,370	3,382
Freehold t.....	2,934	2,932	New Brunswick c	20,006	18,003	Wallington b...	1,812	
Frenchtown b...	1,020	1,023	Newton t.....	4,378	3,003	Washington b...	3,580	2,334
Garfield b...	3,504	1,028	North Plainfield b	5,009		West Hoboken t...	23,094	11,665
Glen Ridge b...	1,960		Ocean City.....	1,307	452	West New York t	5,267	
Gloucester City.	6,840	6,564	Orange c.....	24,141	18,944	West Orange t...	6,899	4,289
Guttenberg t...	3,825	1,247	Passaic c.....	27,777	13,028	Woodbury c.....	4,087	3,811
Hackensack t...	9,443	6,004				Woodstown b...	1,371	1,346

NEW MEXICO.

Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.	
	1900.	1890.		1900.	1890.		1900.	1890.
Albuquerque c...	6,238	3,785	Raton c.....	3,540	1,255	Silver City.....	2,735	2,100
Gallup t.....	2,046		Roswell t.....	2,006		Socorro c.....	1,512	2,295
Las Vegas c....	3,552	2,385	Santa Fe c.....	5,003	6,185			

NEW YORK.

Adams v.....	1,292	1,360	Ellenville v.....	2,879	2,881	Mexico v.....	1,949	1,815
Addison v.....	2,080	2,106	Elmira c.....	35,072	30,896	Middleburg v.....	1,135	1,139
Akron v.....	1,585	1,492	Elmira Heights v.....	1,738		Middleport v.....	1,431	1,377
Albany c.....	94,151	94,923	Fairport v.....	2,489	2,552	Middletown c.....	14,523	11,977
Albion v.....	4,477	4,586	Falconer v.....	1,138	574	Millbrook v.....	1,027	688
Alexandria Bay v	1,511	1,129	Payetteville v.....	1,304	1,410	Mohawk v.....	2,088	1,806
Amityville v.....	2,098	2,203	Fishkill Land.....			Monticello v.....	1,100	1,016
Amsterdam c....	90,929	17,335	Ing v.....	3,673	3,617	Montour Falls v.....	1,108	
Athens v.....	2,171	2,024	Pondra v.....	1,145	1,190	Moravia v.....	1,442	1,486
Attica v.....	1,785	1,994	Port Edward v.....	3,521		Mt. Kisco v.....	1,346	1,085
Auburn c.....	30,845	35,858	Port Plain v.....	2,444	2,564	Mt. Morris v.....	2,410	2,356
Avoca v.....	1,006	958	Frankfort v.....	2,654	2,391	Mt. Vernon c.....	20,346	10,890
Avon v.....	1,001	1,653	Franklinville v.....	1,360	1,021	Naples v.....	1,048	1,266
Babylon v.....	2,157		Fredonia v.....	4,127	3,399	Newark v.....	4,578	3,686
Bainbridge v.....	1,092	1,049	Freeport v.....	2,512		New Berlin v.....	1,156	979
Baldwinsville v.....	2,592	3,040	Friendship v.....	1,214	1,309	Newburg c.....	24,943	23,087
Ballston Spa v.....	3,923	3,527	Fulton v.....	5,321	4,214	New Hartford v.....	1,007	912
Batavia v.....	9,180	7,221	Geneseo v.....	2,400	2,286	Newpaltz v.....	1,022	935
Bath v.....	4,994	3,261	Geneva c.....	10,433	7,557	New Rochelle c.....	2,472,302	9,057
Bath-on-Hudson v.....			Glen Falls v.....	12,613	9,509	New York c.....	3,487,302	1,515,301
Belmont v.....	2,504	2,309	Gloversville c.....	18,349	18,364	Manhattan b.....	1,850,083	
Belmont v.....	1,190	950	Goshen v.....	2,830	2,907	Bronx b.....	200,507	
Binghamton c....	39,647	35,005	Gouverneur v.....	3,089	3,458	Brooklyn b.....	1,166,582	
Bolivar v.....	1,208		Gowanda v.....	2,143		Richmond b.....	67,021	
Boonville v.....	1,745	1,613	Granville v.....	2,700		Queens b.....	152,999	
Brewster v.....	1,192		Greene v.....	1,236	1,007	Niagara Falls c.....	19,457	
Brookport v.....	3,395	3,742	Green Island v.....	4,770	4,463	North Olean v.....	1,549	
Buffalo c.....	352,387	255,064	Greenport v.....	2,366		Northport v.....	1,734	
Caledonia v.....	1,073		Greenwich v.....	1,669	1,663	North Tarrytown v.....	4,241	3,179
Cambridge v.....	1,578	1,596	Groton v.....	1,344	1,280	North Tonawanda c.....	9,069	4,793
Camden v.....	2,370	1,908	Hamburg v.....	1,683	1,531	Northville v.....	1,046	732
Canajoharie v.....	2,101	2,068	Hamilton v.....	1,627	1,744	Norwich v.....	5,796	5,212
Canandaigua v.....	6,151	5,898	Hammondsport v.....	1,169	984	Norwood v.....	1,714	1,463
Canastota v.....	3,080	2,774	Hancock v.....	1,283	1,279	Nunda v.....	1,018	1,010
Canisteo v.....	2,757	2,071	Hastings-upon-Hudson v.....	2,002	1,466	Nyack v.....	4,275	4,111
Canton v.....	1,310	1,324	Haverstraw v.....	5,935	5,070	Ogdensburg c.....	12,633	11,662
Cape Vincent v.....	2,865	2,378	Hempstead v.....	3,584	4,631	Olean c.....	9,462	7,358
Carthage v.....	1,068	1,146	Herkimer v.....	5,535		Oncida v.....	6,364	6,063
Castile v.....	1,214	1,127	Holley v.....	1,390	1,381	Oneonta v.....	7,147	6,272
Castleton v.....	5,484	4,920	Homer v.....	2,381		Oswego c.....	22,199	21,842
Cattaraugus v.....	1,382	878	Honeoye Falls v.....	1,175	1,128	Oswego Falls v.....	2,925	1,821
Cazenovia v.....	1,819	1,987	Hosick Falls v.....	5,671	7,014	Owego v.....	5,039	
Champlain v.....	1,311	1,275	Hornellsville c.....	11,818	10,996	Oxford v.....	1,981	1,477
Charlotte v.....	1,400	980	Horseheads v.....	1,901	1,716	Palmyra v.....	1,937	2,131
Chatham v.....	2,018	1,912	Hudson c.....	9,528	9,970	Patchogue v.....	2,926	
Chester v.....	1,250		Ilion v.....	5,188	4,057	Peekskill v.....	10,358	9,676
Clayton v.....	1,913	1,748	Irvington v.....	2,231	2,299	Penn Yan v.....	4,650	4,254
Clifton Springs v	1,617	1,297	Ithaca c.....	13,186	11,079	Perry v.....	2,763	1,525
Clinton v.....	1,340	1,269	Jamestown c.....	22,892	16,088	Phelps v.....	1,806	1,336
Clyde v.....	2,507	2,638	Johnstown c.....	10,180	7,768	Philmont v.....	1,964	1,818
Cobleskill v.....	2,827	1,822	Jordan v.....	1,118	1,271	Phoenix v.....	1,582	1,466
Cohoes c.....	23,910	22,506	Keeseville v.....	2,110	2,103	Piermont v.....	1,153	1,219
Cold Spring v.....	2,067		Kingston c.....	24,535	21,261	Pittsford v.....	1,000	852
Cooperstown v.....	2,368	2,667	Lancaster v.....	3,750	1,692	Plattsburg v.....	8,434	7,010
Cornith v.....	2,089	1,222	Lansingburg v.....	12,595	10,550	Pleasantville v.....	1,204	
Corning c.....	11,061	8,550	Leroy v.....	3,144	2,743	Port Byron v.....	1,018	1,105
Cornwall v.....	1,968		Leathershire v.....	3,111		Port Chester v.....	7,440	5,274
Cortland c.....	9,014	8,580	Liberty v.....	1,760	734	Port Henry v.....	1,751	2,436
Coxsack v.....	2,735	1,611	Little Falls c.....	10,381	8,783	Port Jervis v.....	9,885	9,327
Croton-on-Hudson v.....	1,533		Little Valley v.....	1,085	698	Potdam v.....	8,843	8,961
Cuba v.....	1,502	1,396	Liverpool c.....	1,133	1,284	Poughkeepsie c.....	24,029	23,206
Catsville v.....	3,633	3,756	Lockport c.....	16,581	16,038	Pulaski v.....	1,493	1,517
Delhi v.....	2,078	1,564	Lowville v.....	2,352	2,511	Randolph v.....	1,300	1,301
Depew v.....	3,379		Lyons v.....	4,300	4,475	Rensselaer c.....	7,466	7,301
Deposit v.....	2,051	1,530	Malone v.....	5,935	4,996	Rhinebeck v.....	1,494	1,649
Dobbs Ferry v.....	2,898	2,063	Mamaroneck v.....	4,722		Richfield Springs v.....	1,537	1,623
Dolgeville v.....	1,915		Manlius v.....	1,219	942	Rochester c.....	162,606	153,896
Dundee v.....	1,291	1,200	Marathon v.....	1,092	1,198	Rockton v.....	1,052	
Dunkirk c.....	11,616	9,416	Massena v.....	2,032	1,049	Rockville Center v.....	1,884	
East Aurora v.....	2,366	1,582	Matteawan v.....	5,807	4,278			
East Syracuse v.....	2,509	2,231	Mechanicville v.....	4,695	2,679			
			Medina v.....	4,716	4,492			

NEW YORK—Continued.

Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.	
	1900.	1890.		1900.	1890.		1900.	1890.
Rome c.....	15,343	14,901	Skaneateles v...	1,495	1,559	Warsaw v.....	3,048	3,120
Rosendale v.....	1,840	1,706	Solvay v.....	3,493	563	Warwick v.....	1,735	1,531
Rouse Point v...	1,875	1,856	Southampton v..	2,280	.....	Waterford v.....	3,146	.....
Sackett's Harbor v	1,266	787	South Glens Falls v	2,025	1,606	Waterloo v.....	4,256	4,320
Sag Harbor v.....	1,969	.....	South Nyack v...	1,601	1,496	Watertown c.....	21,696	14,725
St. Johnsville v...	1,873	1,263	Springville v...	1,992	1,883	Waterville v.....	1,571	2,064
Salamanca v.....	4,251	3,692	Stillwater v.....	1,007	747	Watervliet c.....	14,321	12,967
Salem v.....	1,391	.....	Suffern v.....	1,619	.....	Watkins v.....	2,943	2,604
Sandy Hill v.....	4,473	2,895	Syracuse c.....	106,374	86,143	Waverly v.....	4,465	4,123
Saranac Lake v...	2,584	768	Tarrytown v.....	4,770	3,562	Wayland v.....	1,307	679
Saratoga Springs v	12,409	11,975	Ticonderoga v...	1,911	2,267	Weedsport v.....	1,525	1,569
Saugerties v.....	3,697	4,237	Tivoli v.....	1,153	1,350	Wellsville v.....	3,556	3,425
Schaghticoke v...	1,061	1,258	Tonawanda v.....	7,421	7,145	West Carthage v	1,135	982
Schenectady c.....	31,682	19,902	Troy c.....	60,651	60,956	Westfield v.....	2,430	1,923
Schoharie v.....	1,006	1,028	Trumansburg v...	1,225	1,211	West Haverstraw v	2,079	199
Schuyler v.....	1,601	1,387	Unadilla v.....	1,172	1,157	Whitehall v.....	4,377	4,424
Sea Cliff v.....	1,558	.....	Utica c.....	56,383	44,007	White Plains v...	7,869	4,942
Seneca Falls v...	6,519	6,116	Valatie v.....	1,300	1,437	Whitesboro v...	1,856	1,663
Sidney v.....	2,331	1,358	Walden v.....	3,147	2,132	Wolcott v.....	1,379	922
Silver Creek v...	1,944	1,678	Walton v.....	2,811	2,299	Yonkers c.....	47,931	32,623
Sing Sing v.....	7,939	9,352	Wappingers Falls v	3,504	3,718			

NORTH CAROLINA.

Albemarle t.....	1,382	948	Henrietta t.....	1,250	.....	Randleman t.....	2,190	1,734
Asheville c.....	14,994	10,235	Hertford t.....	1,392	.....	Reidsville t.....	3,362	2,989
Beaufort t.....	2,195	2,007	Hickory t.....	2,535	2,023	Roanoke Rapids t	1,009	.....
Bessemer City t...	1,100	.....	High Point v.....	4,163	439	Rockingham t...	1,507	.....
Burlington t.....	3,622	1,716	Kings Mountain	2,082	.....	Rocky Mount t...	2,837	846
Caroleen t.....	1,705	.....	Kinston t.....	4,106	1,726	Roxboro t.....	1,021	421
Chapel Hill t.....	1,099	1,017	Laurinburg t.....	1,324	1,357	Salem c.....	3,642	2,711
Charlotte c.....	18,091	11,557	Lenoir t.....	1,296	673	Salisbury c.....	6,277	4,428
Cherryville t.....	1,006	.....	Lexington t.....	1,224	1,440	Sanford t.....	1,044	267
Concord c.....	7,910	4,339	Louisburg t.....	1,178	667	Scotland Neck t.	1,243	173
Dunn t.....	1,072	419	McAdenville t...	1,144	.....	Shelby t.....	1,874	1,394
Durham c.....	6,679	5,485	Marion t.....	1,117	799	Southport c.....	1,336	1,207
Edenton t.....	3,046	2,303	Monroe c.....	2,487	1,866	Statesville c.....	3,141	2,518
Elizabeth City t...	6,348	3,251	Mooreville t...	1,533	896	Tarboro t.....	2,499	1,364
Elizabethville t...	4,670	4,322	Morehead City t.	1,879	1,064	Wadesboro t.....	1,546	1,198
Forest City t.....	1,090	419	Morganton t.....	1,686	1,537	Washington t.....	4,842	3,545
Gastonia t.....	4,610	1,033	Mt. Airy t.....	2,650	1,768	Waynesville t...	1,307	455
Goldensboro c.....	5,877	4,017	Newbern c.....	9,080	7,843	Weldon t.....	1,433	1,206
Graham t.....	2,032	991	Newton t.....	1,583	1,088	Wilmington c...	30,976	20,066
Greensboro c.....	10,085	3,817	Oxford t.....	2,059	2,907	Wilson t.....	3,525	2,126
Greenville t.....	2,565	1,837	Plymouth t.....	1,011	1,212	Winston c.....	10,008	8,618
Henderson t.....	3,746	4,191	Raleigh c.....	13,643	12,678			
Hendersonville t	1,917	1,216						

NORTH DAKOTA.

Bismarck c.....	3,319	2,186	Grand Forks c...	7,652	4,979	Mandan c.....	1,658	1,225
Cando t.....	1,061	200	Hillsboro c.....	1,172	715	Mayville c.....	1,106	657
Casselton c.....	1,207	840	Jamestown c.....	2,853	2,296	Minot c.....	1,377	573
Devils Lake c...	1,729	846	Langdon c.....	1,188	291	Park River c.....	1,088	534
Dickinson c.....	2,076	897	Larimore c.....	1,225	553	Valley City.....	2,446	1,639
Fargo c.....	9,589	5,664	Lisbon c.....	1,046	935	Wahpeton c.....	2,223	1,510
Grafton c.....	2,378	1,594						

OHIO.

Ada v.....	2,576	2,079	Barneville v.....	3,721	3,207	Bond Hill v.....	1,081	.....
Addyston v.....	1,513	.....	Batavia v.....	1,029	953	Bowling Green t.	5,067	3,467
Akron c.....	42,728	27,601	Bedford v.....	1,496	1,043	Bradford v.....	1,254	1,228
Alliance c.....	8,974	7,607	Bellaire c.....	9,912	9,934	Bradner v.....	1,148	640
Antwerp v.....	1,206	1,331	Bellefontaine c..	6,649	4,246	Bridgeport v.....	3,963	3,289
Arcanum v.....	1,225	1,134	Bellevue v.....	4,101	3,052	Bryan v.....	8,131	3,606
Ashland v.....	4,087	3,566	Bellville v.....	1,089	941	Bucyrus c.....	6,580	5,574
Ashtabula c.....	12,949	8,328	Berea v.....	2,510	2,523	Byesville v.....	1,267	799
Athens v.....	3,068	2,630	Blanchester v...	1,788	1,196	Cadiz v.....	1,755	1,716
Barberton v.....	4,364	.....	Bluffton v.....	1,783	1,380	Cambridge c.....	8,241	4,362

OHIO—Continued.

Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.	
	1900.	1890.		1900.	1890.		1900.	1890.
Canal Dover v.	5,422	3,470	Hubbard v.	1,230	1,498	Painesville v.	5,024	4,755
Canal Fulton v.	1,172	1,173	Huron v.	1,708	1,380	Paulding v.	2,080	1,879
Canon c.	30,667	26,189	Hyde Park v.	1,691	.....	Payne v.	1,236	1,146
Cardington v.	1,354	1,428	Irontdale v.	1,136	694	Pemberville v.	1,081	843
Carey v.	1,816	1,605	Ironton c.	11,898	10,939	Perrysburg v.	1,766	1,747
Carrollton v.	1,271	1,238	Jackson c.	4,672	4,320	Pigna c.	12,172	9,090
Carthage v.	2,550	2,257	Jacksonville v.	1,047	797	Plain City v.	1,432	1,345
Cedarville v.	1,189	1,355	Jamestown v.	1,305	1,104	Pleasant City v.	1,006	.....
Celina v.	2,815	2,702	Jefferson v.	1,319	1,346	Plymouth v.	1,154	1,133
Chagrin Falls v.	1,586	1,343	Kelley's Island v.	1,174	.....	Pomeroy c.	4,639	4,726
Chardon v.	1,360	1,084	Kent v.	4,541	3,501	Port Clinton v.	2,450	2,049
Chicago			Kenton c.	6,852	5,557	Portsmouth c.	17,870	12,394
Junction v.	2,348	1,299	Lakewood h.	3,355	.....	Ravenna v.	4,003	3,417
Chillicothe c.	12,976	11,288	Lancaster c.	8,991	7,555	Reading v.	3,076	.....
Cincinnati c.	325,902	296,908	Lebanon v.	2,807	3,050	Richwood v.	1,640	1,415
Circleville v.	6,991	6,556	Leetonia v.	2,744	2,826	Ripley v.	2,248	2,483
Cleveland c.	381,768	261,353	Leprie v.	1,726	1,353	Rockford v.	1,207	993
Cleves v.	1,328	1,227	Lima c.	21,723	15,981	Rockport h.	2,038	.....
Clyde v.	2,515	2,327	Lisbon v.	3,330	2,278	Rocky River h.	1,319	.....
Coalgrove v.	1,191	506	Lockland v.	2,695	2,474	Roseville v.	1,207	714
Coalton v.	1,625	1,459	Logan v.	3,480	3,119	Sabina v.	1,481	1,080
College Hill v.	1,104	.....	London v.	3,511	3,313	St. Bernard v.	3,384	1,779
Collinwood v.	3,639	.....	Lorain c.	16,028	4,863	St. Clairsville v.	1,210	1,191
Columbiana v.	1,339	1,112	Loudonville v.	1,581	1,444	St. Marys v.	5,359	3,000
Columbus c.	125,560	88,150	Louisville v.	1,374	1,323	St. Paris v.	1,232	1,145
Grove v.	1,935	1,677	Loveland v.	1,260	1,153	Salem c.	7,582	5,780
Conneaut v.	7,133	3,241	Lowellville v.	1,137	762	Sallineville v.	2,353	2,369
Continental v.	1,104	895	McComb v.	1,195	1,030	Sandusky c.	19,664	18,471
Corning v.	1,401	1,551	McConelsville v.	1,825	1,771	Scio v.	1,214	616
Coshocton v.	6,473	3,672	Madisonville v.	3,140	2,214	Shawnee v.	2,966	3,266
Covington v.	1,791	1,778	Manchester v.	2,003	1,965	Shelby v.	4,685	1,977
Crestline v.	3,282	2,911	Manchester field c.	17,640	13,473	Shreve v.	1,043	1,012
Cuyahoga Falls v.	3,186	2,614	Marietta c.	13,348	8,273	Sidney c.	5,688	4,850
Dayton c.	85,333	61,230	Marietta c.	11,862	8,327	Somerset v.	1,124	1,127
Defiance c.	7,579	7,694	Martins Ferry c.	7,760	6,250	South		
Degraff v.	1,150	1,076	Marysville v.	3,048	2,810	Brooklyn v.	2,343	.....
Delaware c.	7,940	8,224	Massillon c.	11,944	10,062	South		
Delphos c.	4,517	4,516	Maumee v.	1,856	1,645	Charleston v.	1,096	1,041
Delta v.	1,230	1,132	Mechanicsburg v.	1,617	1,459	Spencerville v.	1,874	1,266
Dennison v.	3,763	2,925	Medina v.	2,232	2,073	Springfield c.	38,253	31,895
Deshler v.	1,628	1,114	Miamisburg c.	3,941	2,952	Staubenville c.	14,349	13,394
Doylestown v.	1,057	1,131	Middleport v.	2,799	3,211	Stryker v.	1,206	1,017
Dresden v.	1,600	1,247	Middletown c.	9,215	7,681	Thfin c.	10,989	10,801
Dunkirk v.	1,222	1,220	Midford v.	1,149	995	Tippecanoe v.	1,703	1,465
East Cleveland v.	2,757	.....	Millersburg v.	1,998	1,923	Toledo c.	131,822	81,434
East Liverpool c.	16,485	10,950	Mineral City v.	1,220	893	Toronto v.	3,526	2,536
East Palestine v.	2,493	1,816	Minerva v.	1,200	1,139	Troy c.	5,881	4,494
Eaton v.	3,155	2,934	Mingo Junction v.	2,954	1,856	Uhrichsville c.	3,842	3,842
Edgerton v.	1,043	967	Minster v.	1,465	1,126	Union City v.	1,282	1,203
Elmore v.	1,025	1,198	Monroe v.	1,211	.....	Upper		
Elmwood Place v.	2,532	.....	Montpelier v.	1,869	1,293	Sandusky v.	3,355	3,572
Elyria c.	8,791	5,611	Montpelier v.	1,528	1,329	Urbana c.	6,808	6,510
Evanson v.	1,716	.....	Mt. Healthy v.	1,354	.....	Van Wert c.	6,422	5,512
Fairport v.	2,073	1,171	Mt. Vernon c.	6,633	6,027	Vermilion v.	1,184	.....
Findlay c.	17,613	18,553	Murray City v.	1,118	.....	Versailles v.	1,478	1,385
Forest v.	1,155	1,126	Napoleon v.	3,039	2,764	Wadsworth v.	1,764	1,574
Fort Recovery v.	1,097	1,186	Nelsonville v.	5,421	4,558	Wapakoneta v.	3,915	3,616
Fostoria c.	7,730	7,070	Newark c.	18,157	14,270	Warren c.	8,529	5,973
Franklin v.	2,724	2,729	New Bremen v.	1,318	1,239	Washington		
Fremont c.	8,439	7,141	Newburg h.	5,909	.....	Court House c.	5,751	5,742
Gallion c.	7,292	6,326	New			Washington-		
Gallipolis c.	5,432	4,498	Comerstown v.	2,859	1,351	ville v.	1,092	.....
Garrettsville v.	1,145	1,046	New Lexington v.	1,701	1,470	Wauseon v.	2,148	2,060
Geneva v.	2,342	2,194	(Perry co.)	1,701	1,470	Waverly v.	1,854	1,567
Georgetown v.	1,529	1,472	New London v.	1,180	1,096	Wellington v.	2,094	2,069
Germantown v.	1,702	1,437	New			Wellston c.	8,045	4,377
Gibsonburg v.	1,791	585	Philadelphia c.	6,213	4,456	Wellsville c.	6,146	5,347
Girard v.	2,630	.....	New Richmond v.	1,916	2,379	Westerville v.	1,462	1,329
Glendale v.	1,545	1,444	New			West Liberty v.	1,236	.....
Glenville v.	5,588	.....	Straitsville v.	2,302	2,782	West Union v.	1,033	825
Glouster v.	2,155	.....	Niles c.	7,468	4,289	Williamsburg v.	1,002	898
Grafton v.	1,098	600	North Amherst v.	1,758	1,648	Willoughby v.	1,753	1,219
Granville v.	1,425	1,365	North			Wilmington c.	3,613	3,079
Greenfield v.	3,979	2,460	Baltimore v.	3,561	2,857	Winton Place v.	1,219	.....
Greenville c.	5,501	5,473	Northwalk c.	7,074	7,195	Woodfield v.	1,801	1,631
Hamilton c.	23,914	17,565	Norwood v.	6,480	.....	Wooster c.	6,063	5,901
Harrison v.	1,456	1,690	Oak Harbor v.	1,631	1,081	Wyoming v.	1,450	1,454
Hartwell v.	1,833	1,507	Oberlin v.	4,082	4,376	Xenia c.	8,696	7,301
Hicksdale v.	2,520	2,141	Orville v.	1,901	1,765	Yellow Springs v.	1,371	1,375
Hillsboro v.	4,525	3,620	Ottawa v.	2,322	1,717	Youngstown c.	44,885	33,220
Holgate v.	1,237	1,134	Oxford v.	2,009	1,922	Zanesville c.	23,538	21,009

OKLAHOMA.

Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.	
	1900.	1890.		1900.	1890.		1900.	1890.
Alva c.....	1,499	.....	Hennessey c.....	1,367	.....	Perry c.....	3,351	.....
Blackwell c.....	2,288	.....	Kingfisher c.....	2,301	1,134	Ponca c.....	2,528	.....
Chandler c.....	1,430	.....	Newkirk c.....	1,754	.....	Shawnee c.....	3,462	.....
El Reno c.....	3,368	286	Norman t.....	2,325	787	Stillwater c.....	2,431	40
Enid c.....	3,444	.....	Oklahoma City..	10,037	4,151	Tecumseh c.....	1,194	.....
Guthrie c.....	10,006	5,333	Pawnee c.....	1,464	.....	Weatherford c.....	1,017	.....

OREGON.

Albany c.....	3,149	3,079	Forest Grove c...	1,096	669	Oregon City.....	3,494	3,062
Ashland c.....	2,694	1,764	Grants Pass c...	2,320	1,432	Pendleton t.....	4,406	2,596
Astoria c.....	8,381	6,184	Heppner t.....	1,146	675	Portland c.....	90,226	46,365
Baker c.....	6,665	2,604	La Grande c.....	2,991	2,583	Roseburg c.....	1,680	1,472
Corvallis c.....	1,819	1,527	McMinnville c...	1,430	1,368	Salem c.....	4,263	.....
Dallas c.....	1,271	848	Marshfield t.....	1,391	1,461	The Dalles c.....	3,542	3,009
Eugene c.....	3,336	.....	Medford t.....	1,791	967			

PENNSYLVANIA.

Allegheny c.....	129,896	105,987	Centuria b.....	2,048	2,761	Emlenton b.....	1,190	1,138
Allentown c.....	35,416	25,396	Chambersburg b	8,964	7,988	Emporium b....	2,462	2,167
Altoona c.....	38,973	30,337	Charleroi b.....	5,980	.....	Ephrata b.....	2,451	.....
Ambler b.....	1,864	1,073	Chester c.....	33,998	20,226	Eric c.....	52,738	46,084
Amollo b.....	2,924	2,156	Clarendon b.....	1,060	1,397	Esplen b.....	2,364	.....
Archbald b.....	5,896	4,063	Charlton b.....	2,004	2,164	Etna b.....	5,394	2,767
Arnold b.....	1,426	.....	Clayville b.....	2,371	1,402	Evans City b...	1,309	637
Ashland b.....	6,438	7,346	Chalfield b.....	5,061	2,946	Everett b.....	1,864	1,679
Ashley b.....	4,046	3,193	Clifton Heights b	2,330	1,820	Exeter b.....	1,943	730
Aspinwall b.....	1,231	.....	Coatesville b.....	5,731	3,660	Fairchance b...	1,219	1,062
Athens c.....	3,749	3,274	Columbia b.....	12,316	10,590	Payette City b..	1,586	301
Austin b.....	2,300	1,679	Colwyn b.....	1,266	.....	Ford City b.....	2,670	1,235
Avalon b.....	2,130	804	Connellsville b..	7,160	5,629	Forest City b...	4,279	2,219
Avoca b.....	3,487	3,081	Conshohocken b	5,762	5,470	Forty Fort b...	1,557	1,601
Bangor b.....	4,106	2,560	Coplay b.....	1,561	860	Fountain Hill b.	1,214	.....
Barnesboro b.....	1,462	.....	Coraopolis b.....	2,555	962	Frackville b.....	2,504	2,360
Beaver b.....	2,348	1,559	Corry c.....	5,369	5,677	Franklin c.....	7,317	6,221
Beaver Falls b..	10,054	9,735	Coudersport b...	3,217	1,530	Freedom b.....	1,783	704
Beaver Meadow b	1,378	.....	Crafton b.....	1,927	.....	Freeland b.....	5,254	1,730
Bedford b.....	2,167	2,342	Cressona b.....	1,738	1,461	Freeport b.....	1,754	1,627
Belleville b.....	4,216	3,946	Curwensville b.	1,967	1,664	Galeton b.....	2,415	.....
Bellevue b.....	1,901	1,147	Dale b.....	1,503	.....	Gallitzin b.....	2,750	2,366
Bellevue b.....	3,416	1,418	Dallastown b.....	1,181	779	Gettysburg b...	3,466	3,222
Bellwood b.....	1,545	1,146	Danville b.....	6,042	7,998	Gilberton b.....	4,373	2,697
Berlin b.....	1,030	912	Darby b.....	3,429	2,972	Girardville b...	3,668	3,363
Berwick b.....	.....	.....	Derry b.....	2,347	1,968	Glen Campbell b	1,622	.....
(Columbia Co.)	3,916	2,701	Dickson b.....	4,948	3,110	Glen Rock b...	1,117	697
Bethlehem b.....	7,398	6,762	Dorrance b.....	2,211	586	Gordon b.....	1,165	1,134
Birdsboro b.....	2,264	2,961	Downingtown b.	2,133	1,930	Greencastle b...	1,463	1,363
Blairsville b.....	3,396	3,126	Doylestown b...	3,034	2,519	Greensburg b...	6,568	4,202
Blakely b.....	3,915	2,452	Dubois b.....	9,375	6,149	Greenville b...	4,814	3,674
Bloomsburg t.....	6,170	4,635	Dunbar b.....	1,668	1,361	Grove City b...	1,590	1,160
Bloesburg b.....	2,423	2,568	Duncannon b...	1,661	1,074	Hallethead b...	1,404	1,167
Boyetown b.....	1,709	1,436	Duncansville b..	1,512	1,277	Hamburg b.....	2,315	2,127
Bradock b.....	15,654	8,561	Dunmore b.....	12,583	8,315	Hanover b.....	5,362	3,746
Bradford c.....	15,029	10,514	Duquesne b.....	9,036	.....	Harrisburg c...	50,167	33,325
Bridgeport b.....	.....	.....	East Brady b...	1,239	1,228	Hastings b.....	1,621	1,622
(Montgomery	.....	.....	E. Conemaugh b	2,175	1,156	Hawley b.....	1,925	1,962
Co.)	3,097	2,651	East	.....	.....	Hazleton c.....	14,320	11,322
Bridgeport b.....	.....	.....	Greensburg b...	1,650	.....	Holidaysburg b.	2,994	2,935
(Fayette Co.)	1,805	1,030	East Mauch	.....	.....	Homestead b...	12,554	7,971
Bridgewater b...	1,347	1,177	Chunk b.....	3,468	2,772	Honesdale b...	2,864	2,361
Bristol b.....	7,104	6,553	Easton c.....	25,328	14,491	Houtzdale b...	1,462	2,321
Brockwayville b.	1,777	939	East Pittsburg b.	2,983	.....	Hughestown b...	1,546	1,454
Brookville b.....	2,472	2,478	East	.....	.....	Hughesville b...	1,526	1,356
Brownsville b...	1,552	1,417	Stroudsburg b	2,648	1,819	Hummelstown b.	1,720	1,406
Butler b.....	10,653	8,734	East	.....	.....	Huntingdon b...	6,053	5,730
California b.....	2,009	1,034	Washington b	1,051	.....	Hyndman b.....	1,342	1,621
Cambridge	.....	.....	Ebensburg b.....	1,574	1,202	Indiana b.....	4,142	1,946
Spring b.....	1,466	912	Edgewood b.....	1,130	616	Irwin b.....	2,432	2,426
Canonsburg b...	2,714	2,113	Edwardsville b..	5,165	3,384	Jeannette b...	5,865	3,226
Canon b.....	1,525	1,539	Elizabeth b.....	1,606	1,064	Jeddo b.....	1,682	308
Carbondale c.....	13,536	19,683	Elizabethtown b	1,473	1,218	Jenkintown b...	2,091	1,600
Carlisle b.....	9,696	7,620	Elkland b.....	1,109	1,606	Jermyn b.....	2,567	2,606
Carnegie b.....	7,399	.....	Elkott b.....	3,345	.....	Jersey Shore b.	3,070	1,362
Catawunga b....	2,963	3,704	Ellwood City b..	2,343	.....	Johnsonburg b.	3,894	1,200
Catawissa b.....	2,023	1,809	Emaus b.....	1,468	883	Johnstown c...	35,960	21,965

PENNSYLVANIA—Continued.

Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.	
	1900.	1890.		1900.	1890.		1900.	1890.
Juniata b.....	1,709	.....	New Kensington b	4,665	.....	Shickelhina b..	1,456	1,446
Kane b.....	5,206	2,944	New Philadelphia b	1,326	869	Shippensburg b.	3,228	2,186
Kennett Square b	1,516	1,336	Newport b.....	1,734	1,417	Slatington b....	3,773	2,716
Kingston b.....	3,846	2,381	Newtown b.....	1,463	1,319	Smethport b.....	1,704	1,150
Kittanning b.....	3,902	3,086	Newville b.....	1,655	1,562	Somerset b.....	1,584	1,713
Knoxville b.....	.....	.....	No. Braddock b..	6,535	.....	Souderton b.....	1,077	679
(Allegheny Co.)	3,511	1,723	North-east b.....	2,068	1,586	So. Bethlehem b.	.....	.....
Kutztown b.....	1,386	1,595	Northumberland b.	2,748	2,744	(Northampton Co.)	13,941	10,302
Lancaster c.....	41,459	22,011	North Wake b....	1,267	1,060	South Fork b....	2,636	1,286
Lansdale b.....	2,754	1,858	No. Washingtonb	1,473	.....	South Renovo b..	1,325	136
Lansdowne b.....	2,630	675	North York b....	1,185	.....	So. Washington b.	1,230	.....
Lansford b.....	4,898	4,004	Norwood b.....	1,280	.....	South Waverly b.	1,215	1,068
Latrobe b.....	4,614	3,589	Oakdale b.....	1,147	.....	South Williams-	.....	.....
Lebanon c.....	17,628	14,664	Oakland b.....	1,038	855	port b.....	3,398	2,900
Leechburg b.....	2,450	1,921	Oakmont b.....	2,323	1,678	Spangler b.....	1,616	.....
Leighton b.....	4,620	2,950	Oil City.....	13,264	10,932	Spring City b....	2,506	1,797
Lewistown b.....	3,457	3,244	Old Forge b.....	5,630	4,068	Spring Garden b.	1,015	720
Ligonier b.....	1,250	782	Olyphant b.....	6,180	1,390	Spring Grove b..	1,005	576
Lilly b.....	1,376	915	Orwigsburg b....	1,518	.....	Steelton b.....	12,046	9,350
Lititz b.....	1,637	1,494	Oscoda b.....	2,030	1,730	Stoneboro b.....	1,081	1,394
Littletown b.....	1,118	991	(Clearfield Co.)	2,032	1,711	Stroudsburg b...	3,450	2,419
Lock Haven c....	7,210	7,354	Oxford b.....	1,707	1,424	Sugar Grove b....	1,867	2,566
Luzerne b.....	3,817	2,938	Palo Alto b.....	1,707	.....	Summit Hill b...	2,936	2,816
Lykens b.....	2,762	2,450	Parkersburg c...	1,670	1,317	Sunbury b.....	9,810	5,980
McAdoo b.....	2,122	.....	Parkesburg b....	1,788	1,514	Susquehanna b..	3,613	3,573
McDonald b.....	2,473	1,698	Parnassus b.....	1,791	516	Swissvale b.....	1,716	.....
McKeesport c....	34,237	20,741	Parsons b.....	2,529	2,412	Swoyersville b..	2,264	.....
McKees Rocks b.	6,352	1,067	Patton b.....	2,651	.....	Tamaqua b.....	7,867	6,654
McSherry-	.....	.....	Pen Argy b.....	2,784	2,108	Tarentum b.....	5,472	4,027
town b.....	1,490	1,020	Pennsburg b....	1,032	627	Taylor b.....	4,215	.....
Mahanoy City b.	13,504	11,286	Perkasie b.....	1,803	453	Throop b.....	2,204	.....
Manheim b.....	2,019	2,070	Philadelphia c...	1,293,697	1,046,964	Tidioute b.....	1,237	1,328
Manfield b.....	1,847	1,702	Phillipsburg b..	3,266	3,946	Titusville c.....	8,244	8,073
Marcus Hook b..	1,209	.....	Phoenixville b..	9,196	8,514	Towanda b.....	4,063	4,169
Marietta b.....	2,408	2,402	Pinegrove b.....	1,064	1,106	Tower City b....	2,167	2,053
Marysville b....	1,463	1,115	Pittcalm b.....	2,301	.....	Tremont b.....	1,947	2,064
Mauch Chunk b.	4,029	4,101	Pittsburg c.....	321,616	293,817	Troy b.....	1,450	1,307
Mayfield b.....	2,300	1,085	Pittston c.....	12,556	10,302	Tunkhannock b..	1,906	1,353
Meadville c.....	10,291	9,580	Plymouth b.....	13,649	9,344	Turtle Creek b..	3,322	.....
Mechanicsburg b	.....	.....	Polk b.....	1,037	.....	Tyrone b.....	5,647	4,705
(Cumberland Co.)	3,841	3,691	Port Alleghany b	1,853	1,230	Union City b....	3,104	2,361
Media b.....	3,075	2,736	Port Carbon b...	2,108	1,976	Uniontown b....	.....	.....
Mercer b.....	1,804	2,128	Port Vue b.....	1,808	.....	(Fayette Co.)	7,844	6,599
Meyersdale b....	3,024	1,847	Pottstown b....	13,606	13,265	Upland b.....	2,131	2,275
Middletown b...	5,608	5,060	Pottsville b....	15,710	14,117	Vandergrift b...	2,076	.....
Mifflinburg b...	1,430	1,417	Prospect Park b.	1,050	2,762	Vandergrift	.....	.....
Millersburg b...	1,673	1,527	Quakertown b...	8,014	2,169	Heights b.....	1,910	.....
Mill Hall b.....	1,010	503	Rankin b.....	3,775	.....	Verona b.....	1,904	1,477
Millvale b.....	6,786	3,809	Reading c.....	78,961	58,061	Warren b.....	8,043	4,582
Milton b.....	6,175	5,317	Red Lion b.....	1,337	524	Washington b...	.....	.....
Miners Mill b...	2,224	2,075	Renovo b.....	4,082	4,154	(Washington Co.)	7,670	7,063
Minersville b...	4,815	3,504	Reynoldsville b.	3,435	2,789	Watsonburg b...	1,488	2,157
Monaca b.....	2,008	1,494	Ridgway b.....	3,515	1,903	Waynesboro b...	5,596	3,811
Monessen b.....	2,197	.....	Ridley Park b...	1,234	.....	Waynesburg b...	2,544	2,101
Monongahela c..	5,173	4,006	Roaring Spring b	1,344	920	Weatherly b.....	2,471	2,961
Montgomery b...	1,063	777	Rochester b.....	4,684	3,649	Wellsboro b.....	2,954	2,961
Montoursville b.	1,665	1,278	Roeoe b.....	1,354	.....	W. Bethlehem b..	3,466	2,759
Montrose b.....	1,827	1,735	Royalton b.....	1,106	.....	West Chester b..	9,524	8,028
Moosic b.....	1,227	.....	Royersford b...	2,607	1,815	West Consho-	.....	.....
Morrisville b...	1,371	1,303	St. Clair b.....	4,638	3,680	hocken b.....	1,958	1,666
Mt. Carmel b...	13,179	8,254	St. Marys b.....	4,295	1,745	West Easton b..	1,000	.....
Mt. Holly	.....	.....	Sayre b.....	5,243	.....	Westfield b....	1,180	1,128
Spring b.....	1,328	1,190	Schuylkill	.....	.....	West Hazelton b	2,516	931
Mt. Jewett b....	1,553	.....	Haven b.....	3,654	3,066	West Liberty b..	1,281	863
Mt. Joy b.....	2,018	1,848	Scottsdale b....	4,261	2,663	West Newton b..	2,467	2,295
Mt. Oliver b....	2,295	.....	Scranton c.....	109,026	75,215	West Pittston b.	5,846	3,906
Mt. Pleasant b..	4,745	3,632	Selinsgrove b...	1,326	1,315	W. Washington b	2,693	.....
Mt. Union b....	1,066	810	Sellersville b...	1,347	794	West Wyoming b	1,344	.....
Muncy b.....	1,934	1,295	Sewickley b.....	3,568	2,776	Whitehaven b...	1,517	1,634
Nanticoke b....	12,116	10,044	Shamokin b.....	18,302	14,403	Wilkesbarre c...	51,721	37,718
Nazareth b.....	2,304	1,318	Sharon b.....	8,916	7,459	Wilkesburg b...	11,880	4,062
Neescock b.....	1,100	698	Sharon Hill b...	1,058	.....	Williamsport c..	28,757	27,133
New	.....	.....	Sharsburg b.....	6,842	4,806	Williamstown b..	2,934	2,324
Bethlehem b...	1,269	1,096	Shenandoah b...	2,970	2,830	Wilmerding b....	4,179	419
New Brighton b.	6,820	5,616	Sheraden b.....	20,321	15,944	Winton b.....	1,423	1,797
Newcastle c.....	28,339	11,000	.....	2,948	.....	Womelsdorf b...	1,136	1,141
New	.....	.....	.....	.....	.....	Wrightsville b..	2,366	1,912
Cumberland b...	1,035	751	.....	.....	.....	Wyoming b.....	1,909	1,794
New Haven b...	1,532	1,252	.....	.....	.....	York c.....	88,708	20,733
New Hope b....	1,218	1,142	.....	.....	.....	Yorkville b.....	1,125	916

SOUTH CAROLINA.

Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.	
	1900.	1890.		1900.	1890.		1900.	1890.
Abbeville t.....	3,786	1,696	Chester t.....	4,075	3,703	Manning t.....	1,430	1,669
Aiken t.....	3,414	2,362	Clinton t.....	1,969	1,021	Marion t.....	1,531	1,640
Allendale t.....	1,080	.....	Columbia c.....	21,108	15,353	Mt. Pleasant t.....	2,252	1,126
Anderson c.....	5,498	3,018	Darlington t.....	3,028	2,389	Newberry t.....	4,607	3,080
Bamberg t.....	1,533	696	Dillon t.....	1,015	182	Orangeburg c.....	4,455	2,964
Barnwell t.....	1,339	987	Edgefield t.....	1,776	1,198	Rock Hill c.....	5,485	2,744
Beaufort t.....	4,110	3,587	Florence c.....	4,647	3,385	Spartanburg c.....	11,395	5,344
Bennettsville t.....	1,989	978	Fort Mill t.....	1,394	689	Summerville t.....	2,480	2,219
Blacksburg t.....	1,285	1,945	Gaffney c.....	3,987	1,631	Sumter c.....	5,673	3,285
Blackville t.....	1,116	962	Georgetown t.....	4,128	2,895	Union t.....	5,400	1,669
Branchville t.....	1,101	732	Greenville c.....	11,890	8,607	Walhalla t.....	1,307	889
Brookland t.....	1,069	.....	Greenwood t.....	4,894	1,326	Walterboro t.....	1,491	1,171
Camden t.....	2,441	3,533	Lancaster t.....	1,477	1,094	Winnsboro c.....	1,765	1,736
Charleston c.....	55,907	54,955	Laurens t.....	4,069	2,945	Yorkville t.....	2,012	1,553
Cheraw t.....	1,151	976	McColl t.....	1,311	.....		

SOUTH DAKOTA.

Aberdeen c.....	4,067	3,183	Huron c.....	2,793	3,098	Sioux Falls c.....	10,366	10,177
Beresford v.....	1,046	404	Lead c.....	6,310	2,561	Spearfish c.....	1,166	678
Brookings c.....	2,346	1,518	Madison c.....	2,550	1,786	Sturgis c.....	1,109	606
Canton c.....	1,943	1,101	Milbank c.....	1,436	1,307	Tyndall c.....	1,167	509
Deadwood c.....	3,498	2,366	Mitchell c.....	4,055	2,317	Vermilion c.....	2,163	1,486
Dell Rapids c.....	1,265	993	Pierre c.....	2,306	3,235	Watertown c.....	3,358	2,672
Elk Point v.....	1,061	.....	Rapid City.....	1,342	2,128	Webster c.....	1,506	616
Flandreau v.....	1,944	569	Redfield c.....	1,015	796	Yankton c.....	4,125	3,670
Hot Springs c.....	1,319	1,423						

TENNESSEE.

Athens t.....	1,849	2,224	Harriman t.....	3,442	716	Nashville c.....	50,865	76,185
Bolivar t.....	1,035	1,100	Humboldt t.....	2,866	1,837	Newbern t.....	1,433	1,226
Bristol t.....	5,271	3,324	Huntingdon t.....	1,332	707	Newport t.....	1,630	658
Brownsville c.....	2,645	2,516	Jackson c.....	14,511	10,039	Obion t.....	1,094	690
Chattanooga c.....	30,154	29,100	Jellico t.....	1,283	758	Paris c.....	2,018	1,917
Clarksville c.....	9,431	7,924	Johnson City t.....	4,645	4,161	Pulaski t.....	2,828	2,274
Cleveland t.....	3,858	2,863	Knoxville c.....	32,337	32,535	Ripley t.....	1,640	992
Clinton t.....	1,111	1,198	Lebanon t.....	1,956	1,883	Rockwood t.....	2,390	2,365
Columbia t.....	6,052	5,370	Lewisburg t.....	1,421	631	Rogersville t.....	1,286	1,133
Covington t.....	2,787	1,067	Lexington t.....	1,332	715	Shelbyville t.....	2,235	1,863
Dayton c.....	2,004	2,719	McKenzie t.....	1,296	1,166	South Pittsburgh t.....	1,789	1,679
Dickson t.....	1,363	938	McMinnville t.....	1,980	1,677	Springfield t.....	1,732	1,372
Dyer t.....	1,204	606	Martin c.....	1,730	.....	Sweetwater t.....	1,719	879
Dyersburg c.....	3,647	2,009	Memphis c.....	102,320	64,435	Trenton c.....	2,328	1,696
Fayetteville t.....	2,708	2,410	Milan c.....	1,682	1,546	Tullahoma t.....	2,684	2,439
Franklin t.....	2,180	2,250	Morristown t.....	2,973	1,999	Union City t.....	3,407	3,443
Gallatin t.....	2,409	2,078	Mt. Pleasant t.....	2,007	466	Winchester t.....	1,328	1,333
Greeneville t.....	1,817	1,779	Murfreesboro c.....	3,999	3,739			

TEXAS.

Abilene c.....	3,411	3,194	Clarksville c.....	2,069	1,568	Gainesville c.....	7,874	6,594
Alvarado c.....	1,342	1,543	Cluburne t.....	7,493	3,378	Galveston c.....	37,789	20,064
Amarillo t.....	1,442	482	Coleman t.....	1,362	906	Gatesville c.....	1,865	1,375
Arlington t.....	1,079	664	Columbus c.....	1,884	2,199	Georgetown t.....	2,790	2,447
Atlanta t.....	1,801	1,764	Comanchet.....	2,070	1,236	Goldthwaite t.....	1,362	.....
Austin c.....	22,258	14,575	Commerce t.....	1,800	810	Gonzales c.....	4,397	1,641
Baird t.....	1,502	850	Cooper t.....	1,518	689	Granbury t.....	1,410	1,164
Ballinger t.....	1,128	.....	Corpus Christi c.....	4,708	4,387	Greenville t.....	6,900	4,330
Bastrop t.....	2,145	1,634	Corsicana c.....	9,313	6,235	Groesbeck c.....	1,462	682
Beaumont c.....	9,427	3,296	Crockett t.....	2,612	1,445	Hallettsville t.....	1,457	1,001
Belton c.....	3,700	3,000	Cuero t.....	3,423	2,443	Hearne t.....	2,129	.....
Bonham t.....	5,042	3,361	Dallas c.....	43,638	38,067	Henrietta t.....	1,614	2,109
Bowie t.....	2,600	1,466	Decatur t.....	1,562	1,746	Hico t.....	1,490	649
Brenham c.....	5,968	5,209	Denison c.....	11,807	10,958	Hillsboro c.....	5,346	2,546
Brownsville c.....	6,305	6,134	Denton c.....	4,187	2,558	Honey Grove c.....	2,463	1,887
Brownwood c.....	3,965	2,176	Dublin c.....	2,370	2,025	Houston c.....	44,633	27,557
Bryan c.....	3,589	2,979	Eagle Lake t.....	1,107	769	Hubbard c.....	1,606	694
Burnett t.....	1,003	1,454	El Paso c.....	15,906	10,338	Huntsville t.....	2,465	1,519
Caldwell t.....	1,535	1,250	Ennis c.....	4,919	2,171	Italy t.....	1,061	379
Calvert t.....	3,383	2,632	Farmersville v.....	1,866	1,063	Itasca v.....	1,377	587
Cameron c.....	3,341	1,608	Flstonia c.....	1,210	1,304	Jacksboro t.....	1,311	731
Cisco t.....	1,514	1,063	Fort Worth c.....	26,688	23,076	Jacksonville c.....	1,566	879

TEXAS—Continued.

Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.	
	1900.	1890.		1900.	1890.		1900.	1890.
Jefferson c.....	2,850	3,073	Navasota t.....	3,857	2,997	Taylor t.....	4,311	2,584
Kaufman c.....	2,578	1,282	New Braunfels c	2,097	1,608	Temple c.....	7,065	4,047
Kerrville t.....	1,428	1,044	Oak Cliff t.....	3,630	2,470	Terrell c.....	6,330	2,968
Ladonia t.....	1,409	765	Orange c.....	3,635	3,173	Texarkana c.	5,256	2,852
La Grange c.....	2,322	1,636	Palestine c.....	3,297	5,838	Tyler t.....	8,069	6,908
Lampasas t.....	2,107	2,408	Paris c.....	9,358	8,254	Uvalde t.....	1,989	1,265
Lancaster t.....	1,045	741	Pittsburg t.....	1,783	1,308	Van Alstyne t.	1,040	787
Laredo c.....	13,429	11,319	Plano t.....	1,304	842	Vernon t.....	1,993	2,857
Lockhart t.....	2,306	1,233	Quanah t.....	1,651	1,477	Victoria c.....	4,010	3,046
Longview t.....	3,591	2,034	Rockdale c.....	2,515	1,505	Waco c.....	20,686	14,445
Lufkin t.....	1,537	539	Rockport t.....	1,153	1,069	Waxahachie t.	4,315	3,076
Luling t.....	1,349	1,792	Rockwall c.....	1,245	843	Weatherford c.	4,786	3,369
McGregor t.....	1,435	774	San Antonio c..	53,321	37,673	Weimar t.....	1,337	1,443
McKinney c.....	4,342	2,469	San Marcos t..	2,292	2,335	Whitesboro t..	1,243	1,170
Marlin t.....	3,062	2,068	Schulenburg t..	1,149	816	Whitewright t.	1,904	980
Marshall c.....	7,855	7,307	Seguin t.....	2,421	1,716	Wichita Falls t.	2,840	1,967
Mexia t.....	2,338	1,674	Sherman c.....	10,243	7,335	Wills Point t..	1,247	1,025
Mincola t.....	1,735	1,333	Smithville t..	2,577	616	Wolfe City t....	1,549	967
Mineral Wells t.	2,048	577	Stephenville c..	1,902	909	Yoakum t.....	3,499	1,745
Nacogdoches c..	1,827	1,138	Sulphur Springs t	3,635	3,088			

UTAH.

American Fork c	2,732	.....	Lehi City.....	2,719	.....	Pleasant Grove c	2,460	1,926
Beaver c.....	1,701	.....	Logan c.....	5,451	4,565	Provo City.....	6,185	5,159
Bountiful c.....	1,443	.....	Manti c.....	2,408	1,950	Richfield c.....	1,969	1,531
Brigham c.....	2,859	2,189	Mercur c.....	2,351	.....	Richmond c.....	1,111	.....
Cedar c.....	1,435	997	Monroe t.....	1,057	880	St. George c.....	1,600	.....
Ephraim c.....	2,666	.....	Moroni c.....	1,224	958	Salt Lake City..	53,531	44,843
Eureka c.....	3,065	1,733	Mt. Pleasant c..	2,372	2,254	Sandy c.....	1,030	.....
Fairview c.....	1,119	844	Nephi c.....	2,308	2,084	Smithfield c....	1,494	1,080
Fillmore City..	1,067	.....	Ogden City.....	16,312	14,889	Spanish Fork c..	2,735	2,214
Grantville c....	1,068	.....	Park City.....	3,759	2,850	Spring City.....	1,135	1,044
Heber c.....	1,534	1,538	Parowan c.....	1,039	.....	Springville c....	3,422	2,849
Hyrum c.....	1,652	.....	Payson c.....	2,636	2,135	Tooele c.....	1,300	.....
Kaysville c.....	1,708	548						

VERMONT.

Barre c.....	8,448	4,146	Middlebury v...	1,897	1,762	Rutland c.....	11,499	.....
Barton v.....	1,050	778	Montpelier c...	6,266	4,160	St. Albans c.....	6,339	.....
Bellows Falls v.	4,337	3,062	Morrisville v...	1,263	.....	St. Johnsbury v.	5,666	3,857
Bennington v...	5,656	3,971	Newport v.....	1,674	1,730	Springfield v....	2,040	1,512
Brattleboro v...	5,397	5,467	North.....	.....	.....	Swanton v.....	1,168	1,378
Burlington c...	18,640	14,590	Bennington v.	1,474	.....	Vergennes c.....	1,753	1,773
Essex Junction v	1,141	.....	Northfield v...	1,508	1,222	Waterbury v.....	1,597	955
Fair Haven v....	2,470	.....	Proctor v.....	2,012	.....	Windsor v.....	1,556	1,384
Hardwick v.....	1,334	.....	Randolph v....	1,540	1,573	Winoochi v.....	3,733	3,659
Ludlow v.....	1,454	1,081	Richford v.....	1,512	1,162	Woodstock v....	1,284	1,218
Lyndonville v...	1,374	606						

VIRGINIA.

Abingdon t.....	1,306	1,674	Fredericksburg c	5,068	4,528	Radford c.....	3,344	2,060
Alexandria c...	14,528	14,339	Front Royal t...	1,005	868	Richmond c.....	85,050	81,368
Ashland t.....	1,147	948	Graham t.....	1,554	1,021	Roanoke c.....	21,495	16,159
Basic City t....	1,270	.....	Hampton t.....	3,441	2,512	Salem t.....	3,412	3,279
Bedford City t..	2,416	2,897	Harrisonburg t..	3,531	2,792	Saltsville t.....	1,051	.....
Berkley t.....	4,988	3,899	Leesburg t.....	1,513	1,650	Scottsville t....	1,248	362
Big Stone Gap t.	1,617	.....	Lexington t.....	3,303	3,059	Shenandoah t...	1,220	751
Bristol c.....	4,579	2,902	Luray t.....	1,147	1,386	Smithfield t....	1,225	891
Buena Vista c...	2,388	1,044	Lynchburg c.....	18,891	19,709	South Boston t..	1,851	1,739
Cape Charles t..	1,040	.....	Manchester c....	9,715	9,246	Staunton c.....	7,389	6,975
Charlottesville c.	6,449	5,591	Marion t.....	2,045	1,651	Suffolk c.....	3,827	3,354
Clifton Forge t.	3,212	1,792	Martinsville t..	2,384	.....	Tazewell t.....	1,096	604
Covington t....	2,950	704	Newport News c.	19,635	4,449	Vinton t.....	1,438	1,067
Crews t.....	1,329	887	Norfolk c.....	46,624	34,671	Warrenton t....	1,627	1,246
Culpeper t.....	1,618	1,630	Petersburg c....	21,810	22,680	West Point t....	1,307	2,018
Danville c.....	16,520	10,305	Phoebus t.....	2,004	.....	Williamsburg c.	2,044	1,631
Emporia t.....	1,027	1,068	Pocahontas t...	2,789	2,953	Winchester c....	5,161	5,196
Falls Church t..	1,007	792	Portsmouth c...	17,427	13,363	Woodstock t....	1,069	1,068
Farmville t.....	2,471	2,404	Pulaski t.....	2,613	2,112	Wytheville t....	3,003	2,570
Franklin t.....	1,148	675						

WASHINGTON.

Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.		Cities, towns, villages, and boroughs.	Population.	
	1900.	1890.		1900.	1890.		1900.	1890.
Aberdeen t.....	3,747	1,688	Everett c.....	7,838	.....	Puyallup c.....	1,884	1,728
Anacortes t.....	1,476	1,131	Fairhaven c.....	4,228	.....	Republic c.....	2,050	.....
Ballard c.....	4,568	1,173	Hoquiam c.....	2,608	1,332	Roslyn t.....	2,786	1,244
Blaine c.....	1,592	.....	Montesano t.....	1,194	1,632	Seattle c.....	80,671	42,827
Buckley t.....	1,014	.....	St. Vernon t.....	1,120	770	Smohomish c.....	2,101	1,593
Centralia c.....	1,600	2,026	New Whatcom c.....	6,834	.....	Spokane c.....	36,848	19,922
Chehalis c.....	1,775	1,309	North Yakima c.....	2,154	1,888	Steilacoom t.....	1,015	270
Colfax c.....	2,121	1,649	Olympia c.....	4,082	4,698	Tacoma c.....	37,714	36,006
Cosmopolis t.....	1,004	287	Port Angeles c.....	2,221	.....	Vancouver c.....	4,006	2,345
Davenport t.....	1,000	306	Port Townsend c.....	3,443	4,658	Wabburg c.....	1,011	617
Dayton c.....	2,216	1,840	Pullman c.....	1,308	868	Walla Walla c.....	10,049	4,708
Ellensburg c.....	1,737	2,708						

WEST VIRGINIA.

Ansted t.....	1,080	.....	Guyandot t.....	1,450	1,502	New Martinsville t.....	1,089	628
Benwood c.....	4,511	2,924	Hinton c.....	3,723	2,570	Parkersburg c.....	11,703	8,408
Bluefield c.....	4,644	1,775	Huntington c.....	11,922	10,108	Piedmont t.....	2,115	.....
Buckhannon t.....	1,589	1,403	Keyser t.....	2,536	2,165	Point Pleasant t.....	1,994	1,658
Central City t.....	1,580	.....	Keystone t.....	1,088	.....	Ravenswood t.....	1,074	617
Ceredo v.....	1,279	923	McMechen t.....	1,465	427	Shepherdstown t.....	1,184	1,515
Charleston c.....	11,099	6,742	Mannington t.....	1,681	908	Sistersville c.....	2,979	469
Charles Town.....	2,324	2,387	Martinsburg t.....	7,564	7,236	Thomas t.....	2,126	289
Clarksburg t.....	4,050	3,008	Monongah t.....	1,786	.....	Wellsburg c.....	2,586	2,285
Davis t.....	2,391	918	Montgomery t.....	1,594	.....	Weston t.....	2,560	2,122
Elkins t.....	2,016	787	Morgantown t.....	1,825	1,011	Wheeling c.....	36,878	24,522
Fairmont c.....	5,655	1,623	Moundsville c.....	5,362	2,938			
Grafton c.....	5,850	2,159	New Cumberl'd t.....	2,198	2,205			

WISCONSIN.

Algoma c.....	1,738	1,015	Green Bay c.....	18,684	9,069	Plymouth c.....	2,257	1,508
Alma c.....	1,201	1,423	Hartford c.....	1,632	1,266	Portage c.....	5,459	5,142
Antigo c.....	5,145	4,424	Horicon c.....	1,376	1,254	Port.....	.....	.....
Appleton c.....	15,085	11,869	Hudson c.....	3,259	2,385	Washington c.....	3,016	1,659
Arcadia v.....	1,273	659	Janesville c.....	18,185	10,836	Prairie du Chien c.....	3,223	3,131
Ashland c.....	13,074	9,956	Jefferson c.....	2,584	2,287	Prescott c.....	1,008	911
Augusta c.....	1,256	1,187	Kaukauna c.....	5,115	4,667	Princeton v.....	1,302	926
Baraboo c.....	5,751	4,605	Kenosha c.....	11,006	6,532	Racine c.....	29,102	21,014
Barron c.....	1,493	829	Kewaunee c.....	1,773	1,316	Reedsburg c.....	2,225	1,737
Bayfield v.....	1,089	1,373	Kilbourn City v.....	1,134	961	Rhineland c.....	4,998	2,695
Beaverdam c.....	5,124	4,222	La Crosse c.....	28,695	25,090	Rice Lake c.....	3,008	2,139
Beloit c.....	10,436	6,315	Lake Geneva c.....	2,585	2,297	Richland Center c.....	2,321	1,849
Berlin c.....	4,489	4,149	Lake Mills v.....	1,387	1,053	Ripon c.....	2,818	2,252
Black Riv. Falls c.....	1,938	2,261	Lancaster c.....	2,409	1,543	River Falls c.....	2,008	1,728
Boscobel c.....	1,637	1,570	Lodi v.....	1,068	736	Seymour c.....	1,086	728
Brodhead c.....	1,584	1,461	Madison c.....	19,164	13,426	Shawano c.....	1,862	1,505
Burlington c.....	2,526	2,049	Maytown c.....	11,786	7,710	Sheboygan c.....	22,962	14,259
Cedarburg c.....	1,691	1,361	Mariette c.....	10,195	11,523	Sheboygan Falls v.....	1,301	1,116
Chilton c.....	1,400	1,421	Marshfield c.....	5,240	3,450	Shullsburg c.....	1,250	1,200
Chippewa Falls c.....	8,094	6,670	Mauston c.....	1,718	1,243	So. Milwaukee c.....	3,392	.....
Clintonville c.....	1,053	1,493	Mayville c.....	1,815	1,165	Sparta c.....	3,555	2,705
Columbus c.....	2,349	1,977	Medford c.....	1,758	1,193	Spring Valley v.....	1,021	.....
Cudahy v.....	1,360	.....	Menasha c.....	5,589	4,581	Stanley c.....	2,387	.....
Cumberland c.....	1,322	1,219	Menominee c.....	5,655	5,491	Stevens Point c.....	9,534	7,596
Darlington c.....	1,808	1,589	Merrill c.....	8,537	6,809	Stoughton c.....	3,431	2,470
Delavan c.....	2,244	2,038	Milwaukee c.....	285,315	204,468	Sturgeon Bay c.....	3,372	2,195
De Pere c.....	4,038	3,625	Mondovi c.....	1,208	503	Superior c.....	31,001	11,983
Dodgeville c.....	1,865	1,722	Monroe c.....	3,267	3,768	Tomah c.....	2,840	2,129
Duro c.....	1,458	1,154	Necedah v.....	1,200	1,708	Tomahawk c.....	2,391	1,616
Eau Claire c.....	17,517	17,415	Neenah c.....	5,954	6,683	Two Rivers c.....	3,784	2,679
Edgerton c.....	2,102	1,585	Neillsville c.....	2,104	1,936	Viroqua c.....	1,650	1,279
Elkhorn c.....	1,781	1,447	New Lisbon c.....	1,014	990	Waterloo v.....	1,137	682
Ellsworth v.....	1,052	670	New London c.....	2,749	2,650	Watertown c.....	8,427	6,255
Elroy c.....	1,085	1,413	New Richmond c.....	1,631	1,408	Waukegan c.....	7,419	6,281
Evansville c.....	1,864	1,523	No. Milwaukee v.....	1,049	.....	Waupaca c.....	2,912	2,121
Fennimore v.....	1,055	616	Oconomowoc c.....	2,860	2,729	Waupun c.....	3,166	2,737
Fond du Lac c.....	15,110	12,024	Oconto c.....	5,646	5,819	Wausau c.....	12,254	9,253
Fort Atkinson c.....	3,043	2,283	Omro v.....	1,358	1,232	Wauwatosa c.....	2,842	.....
Fountain City.....	1,031	972	Onaska c.....	1,368	1,587	West Bend c.....	2,119	1,226
Glenwood c.....	1,789	.....	Oshkosh c.....	28,284	22,536	White Water c.....	3,405	4,259
Greater Grand Rapids c.....	4,493	1,702	Phillips c.....	1,220	.....	Winneconne v.....	1,042	1,026
			Platteville c.....	3,340	2,740			

WYOMING.

Cheyenne c.....	14,067	11,090	Laramie c.....	8,207	6,388	Rock Springs c.....	4,263	2,426
Evansville c.....	2,110	1,905	Rawlins c.....	2,317	2,226	Sheridan c.....	1,659	282
Green River t.....	1,361	723						

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